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BOILER-MAKERS'
& IRON SHIP-BUILDERS'
COMPANION

"KNOWLEDGE IS POWER."

THE

BOILERMAKERS' & IRON SHIPBUILDERS'

COMPANION:

COMPRISING A SERIES OF

ORIGINAL AND CAREFULLY CALCULATED TABLES,

OF THE UTMOST UTILITY TO PERSONS INTERESTED IN THE IRON TRADES.

With Numerous Illustrations.

By JAMES FODEN,

AUTHOR OF "MECHANICAL TABLES."

ENTERED AT STATIONERS' HALL.

LONDON:
E. & F. N. SPON, 48, CHARING CROSS.
LIVERPOOL:
J. THOMAS, 200, SCOTLAND ROAD.
1869.

186. g 35

PRINTED BY J. THOMAS, SCOTLAND ROAD, LIVERPOOL.

PREFACE.

In presenting this work to the practical Boilermakers and Iron Shipbuilders of Great Britain and Ireland, I hope they will study it with attention, to enable them to become acquainted with the elucidations of the practical examples which are given in the observations accompanying each section, as it is the result of my leisure hours, and has been accomplished by the aid of the lamp after the labours of the day, and is a humble effort to remove many difficulties under which they have laboured for the want of a more general knowledge of the practical part of their business.

The purport of the work is to impart knowledge to all those requiring it; because the value of mechanical science is most appreciated on account of the ease with which the workman can perform and lay out his work in a practical and scientific manner.

In the various rules and examples given in the work, I have taken care to present them in the most simple manner, so that there may be nothing discouraging by any unnecessary display of formulas. All may understand who are familiar with the four rules of arithmetic—Addition, Subtraction, Multiplication, and Division.

Some men, of contracted minds, think it unwise to impart a general knowledge of business to all—but I think otherwise. The practical man should be learned in all things relative to his trade, to enable him to do and finish a piece of work in a business-like manner.

I have given in the work all the requirements for constructing templates for cylindrical boilers, consisting of conic frustums, egg-end boilers, domes, barrels, &c., and I hope that my humble efforts will be appreciated by those workmen who are employed in the construction of them.

In conclusion, let me remind the practical man that the science of mechanics is the greatest of all sciences; it teaches the mind to think correctly, and produces that intellectual enjoyment which no other study can impart.

I am, with all respect,

Your servant,

JAMES FODEN.

CONTENTS.

SECTION 1.

Page.

Tables of lengths for the formation of circular and oval angled iron rings, flange outside, from 6 inches to 8 feet 8⅛ inches diameter, and ¼ inch to 1¼ inch thick - - - - - - 1

SECTION 2.

Tables of lengths for the formation of circular and oval angled iron rings, flange inside, from 6 inches to 8 feet 8⅛ inches diameter, and ¼ inch to 1¼ inch thick. - - - - - 57

SECTION 3.

Tables for the formation of circular and oval pipes, from 1 inch diameter to 2 feet 8⅛ inches, made of iron plates from $\frac{1}{32}$ inch to ⅛ inch thick. - - - - - - - 113

SECTION 4.

Tables of diameters and circumferences for the formation of plain hoops and rings, from $\frac{1}{32}$ inch diameter to 16 feet - - - 129

SECTION 5.

Tables for the formation of templates for tubes, flues, and boilers, from 2 feet to 10 feet diameter, made of iron plates from $\frac{5}{16}$ inch thick to ⅛ inch, giving the versed line for 770 templates, with instructions to find the versed line by calculations. - - 143

To find the template for a given cone. - - - - 176

To find the template for a given frustum of a cone. - - - 176

To find the template for a given cylinder, having a portion cut off, so that one of the ends shall be at a given angle to its sides. - 177

To find the breadth of template for a given dome at any particular place, by calculation - - - - - - 178

To find the template for a given short egg-end spherical - - 179

To find the template for a given long egg-end parabola, the breadth and length of the template at any particular place - - 180

To find the template for a given barrel spheroid, with the breadth and length of the template at any particular place, by calculation 182

Section 6.

Approximate rules for finding the weight of different figures of wrought iron and steel. - - - - - - 185
Weight of a cubic foot and cubic inch of wrought iron and steel - 187
Weight of boiler plates per square foot, from ¼ inch to 1½ inch thick in qrs. and lbs. - - - - - - - 187
Weight of malleable round iron, from 1 foot to 5 feet in length, in qrs. and lbs. - - - - - - - 188
Weight of malleable square iron, from 1 foot to 5 feet in length, in qrs. and lbs. - - - - - - - 189
Weight of malleable flat iron, from 1 foot to 5 feet in length, in qrs. and lbs. - - - - - - - - 190
Weight of ordinary angled iron from 1 foot to 5 feet in length, in qrs. and lbs. - - - - - - - - 194
Weight of a superficial square foot of plate or sheet iron in lbs. and ounces; thickness measured by the Birmingham wire guage - 196
For ascertaining the weight of malleable iron pipes, 12 inches long, of various thicknesses and diameters. - - - - 196

Section 7.

To find the area of a four-sided figure, whether it be a square, a rectangle, a rhombus, or a rhomboid - - - - 197
To find the area of a triangle, whether it be isosceles, scalene, or right-angled - - - - - - - - 198
Any two sides of a right-angled triangle being given, to find the third side - - - - - - - - 198
To find the area of a trapezoid. - - - - - 200
To find the area of a trapezium - - - - - 200
To find the circumference of a circle when the diameter is given, or the diameter when the circumference is given. - - - 200
The area of a circle given, to find the diameter or circumference - 201
To find the circumference of an ellipse or oval. - - - 202
To find the area of an ellipse or oval. - - - - 203
To find the superficies and solidity of a cube. - - - 203
To find the superficies and solidity of a parallelopipedon - - 204
To find the solidity of cylinders and prisms. - - - - 204
To find the convex surface of a cylinder - - - - 205
To find the solidity of a cone or pyramid. - - - - 205
To find the solidity of the frustum of a cone - - - 205

To find the solidity of the frustum of a pyramid - - - 206
To find the convex surface of a right cone or pyramid. - - 206
To find the convex surface of the frustum of a right cone or pyramid 206
To find the solid content and convex surface of a sphere or globe, also to find the solid content and convex surface of the segment of a sphere or globe - - - - - - 207
To find the number of imperial gallons contained in any square or rectangular cistern or tank - - - - - 209
Any two dimensions of a square or rectangular cistern or tank being given, to find the third that shall contain any number of imperial gallons required. - - - - - - - 209
To find the content of a cylinder in imperial gallons. - - 210
The length of a cylinder given, to find the diameter, or the diameter given, to find the length that shall contain any number of imperial gallons required - - - - - - . - 211
To find the content of a sphere or globe in imperial gallons. - - 211
To find the weight of a cubic or cylindrical foot of water - - 212
To erect a perpendicular on a given right line from a given point in that line. - - - - - - - - - 212
To bisect a given line. - - - - - - - - 212
To bisect a given angle. - - - - - - - 213
To draw a line parallel to a given line. - - - - 213
To draw an oval of the first kind, having the length given - - 213
To draw an oval of the second kind, having the length given. - 214
To construct a regular hexagon upon a given right line. - - 214
To cut off the corners of a given square so as to form an octagon - 214
To draw a parabola by finding any number of points in the curve - 215
To draw the curve line of an arc without having recourse to the centre. - - - . - - - - - 215
To describe an ellipse, having two diameters given - - - 215
To describe the template for a given diameter of sugar pan of the spherical form - - - - - - - - 216
To cut the selvage of a plate required to form a given cylinder, which is to be flanged, and made to fit a given circle - - - 217
Table of strengths of steel and iron - - - - - 218
To find the ultimate cohesive strength of square, flat, and round bars 218
Table containing the fractional parts of an inch when divided into thirty-two parts, also a foot of twelve inches reduced to decimals 219
Tempering steel tools - - - - - - - - 220
Case hardening - - - - - - - - 220

THE BOILER-MAKERS'

AND

IRON SHIP-BUILDERS' COMPANION.

SECTION I.

Tables for the formation of Circular and Oval Angled Iron Rings,

FLANGE OUTSIDE.

FIG. 1.

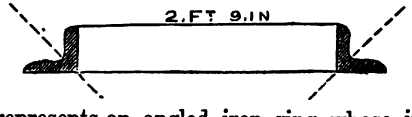


Figure 1 represents an angled iron ring, whose inside diameter is supposed to be 2 feet 9 inches, made of angled iron, measuring 1 inch thick diagonally across the root of the bar. In table 7, page 40, in the column of lengths, opposite the given diameter, is 9ft. 1⅞in, the length required for a ring of such dimensions.

EXAMPLES.—What length of angled iron, measuring ⅝ of an inch thick, diagonally across the root, is required to make a ring, the inside diameter being 2 feet? In table 4, page 22, opposite 2 feet, is 6 feet 7¼ inches, the length required.

What length of angled iron, which measures 1¼ inch thick, diagonally across the root of the bar, will make a ring, the inside diameter being 8 feet 6 inches? In table 9, page 56, opposite the given diameter, is 27 feet 4¼ inches, the length required.

To make an angled iron ring, in two equal parts, jump jointed, measuring ½ inch thick diagonally across the root of the bar, whose inside diameter is 6 feet 5 inches. To find the length

required for one of the parts: in table 3, page 19, opposite the given diameter, is 20 feet 5 inches, which, if divided by 2, gives 10 feet 2½ inches, the length required for one half the ring.

FIG. 2.

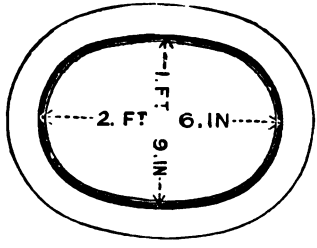


Figure 2 represents an oval ring, whose axis are 2 feet 6 inches and 1 foot 9 inches. To find the length for any size of such ring, reduce the two axis to a diameter, by adding them together, and divide their product by 2.

EXAMPLE—What length of angled iron is required to form an oval ring whose axis are 2 feet 6 inches and 1 foot 9 inches, to be made of angled iron, measuring 1 inch diagonally across the root of the bar—

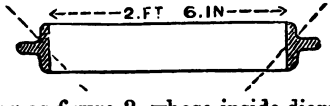
2 feet 6 inches.
1 ,, 9 ,,

2 | 4 ,, 3 ,,

2 ,, 1½ ,, the diameter required.

In table 7, page 40, opposite 2 feet 1½ inches, inside diameter, is 7 feet 2⅜ inches, the length required.

FIG. 3.



To make a ring as figure 3, whose inside diameter equals 2 feet 6 inches, to be formed of T iron, measuring 1 inch thick, diagonally across the root of the bar, what length is required for the ring? In table 7, page 40, opposite the given diameter, is 8 feet 4½ inches, the length required.

TABLE I.,

For ANGLE IRON measuring ¼ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.	LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
6	1	8 3/8	0	10	2	9	1	2	3	9 1/2	1	6	4	10 1/8
6 1/8	1	8 3/4	0	10 1/8	2	9 3/8	1	2 1/8	3	9 7/8	1	6 1/8	4	10 1/2
6 1/4	1	9 1/8	0	10 1/4	2	9 3/4	1	2 1/4	3	10 3/8	1	6 1/4	4	10 7/8
6 3/8	1	9 1/2	0	10 3/8	2	10 1/8	1	2 3/8	3	10 3/4	1	6 3/8	4	11 1/4
6 1/2	1	10	0	10 1/2	2	10 1/2	1	2 1/2	3	11 1/8	1	6 1/2	4	11 5/8
6 5/8	1	10 3/8	0	10 5/8	2	10 7/8	1	2 5/8	3	11 1/4	1	6 5/8	5	0
6 3/4	1	10 3/4	0	10 3/4	2	11 3/8	1	2 3/4	3	11 7/8	1	6 3/4	5	0 3/8
6 7/8	1	11 1/8	0	10 7/8	2	11 3/4	1	2 7/8	4	0 1/4	1	6 7/8	5	0 7/8
7	1	11 1/2	0	11	3	0 1/8	1	3	4	0 5/8	1	7	5	1 1/4
7 1/8	1	11 7/8	0	11 1/8	3	0 1/2	1	3 1/8	4	1	1	7 1/8	5	1 5/8
7 1/4	2	0 3/8	0	11 1/4	3	0 7/8	1	3 1/4	4	1 3/8	1	7 1/4	5	2
7 3/8	2	0 3/4	0	11 3/8	3	1 1/4	1	3 3/8	4	1 7/8	1	7 3/8	5	2 3/8
7 1/2	2	1 1/8	0	11 1/2	3	1 5/8	1	3 1/2	4	2 1/4	1	7 1/2	5	2 3/4
7 5/8	2	1 1/2	0	11 5/8	3	2	1	3 5/8	4	2 5/8	1	7 5/8	5	3 1/8
7 3/4	2	1 7/8	0	11 3/4	3	2 1/2	1	3 3/4	4	3	1	7 3/4	5	3 5/8
7 7/8	2	2 3/8	0	11 7/8	3	2 7/8	1	3 7/8	4	3 3/8	1	7 7/8	5	4
8	2	2 3/4	1	0	3	3 1/4	1	4	4	3 3/4	1	8	5	4 3/8
8 1/8	2	3 1/8	1	0 1/8	3	3 5/8	1	4 1/8	4	4 1/8	1	8 1/8	5	4 3/4
8 1/4	2	3 1/2	1	0 1/4	3	4	1	4 1/4	4	4 1/2	1	8 1/4	5	5 1/8
8 3/8	2	3 7/8	1	0 3/8	3	4 3/8	1	4 3/8	4	5	1	8 3/8	5	5 1/2
8 1/2	2	4 1/4	1	0 1/2	3	4 7/8	1	4 1/2	4	5 3/8	1	8 1/2	5	5 7/8
8 5/8	2	4 5/8	1	0 5/8	3	5 1/4	1	4 5/8	4	5 3/4	1	8 5/8	5	6 3/8
8 3/4	2	5	1	0 3/4	3	5 5/8	1	4 3/4	4	6 1/8	1	8 3/4	5	6 3/4
8 7/8	2	5 1/8	1	0 7/8	3	6	1	4 7/8	4	6 1/2	1	8 7/8	5	7 1/8
9	2	5 7/8	1	1	3	6 3/8	1	5	4	7	1	9	5	7 1/2
9 1/8	2	6 1/4	1	1 1/8	3	6 3/4	1	5 1/8	4	7 3/8	1	9 1/8	5	8
9 1/4	2	6 5/8	1	1 1/4	3	7 1/8	1	5 1/4	4	7 3/4	1	9 1/4	5	8 3/8
9 3/8	2	7	1	1 3/8	3	7 5/8	1	5 3/8	4	8 1/8	1	9 3/8	5	8 3/4
9 1/2	2	7 3/8	1	1 1/2	3	8	1	5 1/2	4	8 1/2	1	9 1/2	5	9 1/8
9 5/8	2	7 3/4	1	1 5/8	3	8 3/8	1	5 5/8	4	8 7/8	1	9 5/8	5	9 1/2
9 3/4	2	8 1/4	1	1 3/4	3	8 3/4	1	5 3/4	4	9 1/4	1	9 3/4	5	9 7/8
9 7/8	2	8 5/8	1	1 7/8	3	9 1/8	1	5 7/8	4	9 5/8	1	9 7/8	5	10 1/4

For ANGLE IRON measuring $\frac{1}{4}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
1	10	5	$10\frac{3}{8}$	2	2	6	$11\frac{1}{4}$	2	6	7	$11\frac{3}{4}$	2	10	9	$0\frac{3}{8}$
1	$10\frac{1}{8}$	5	11	2	$2\frac{1}{8}$	6	$11\frac{5}{8}$	2	$6\frac{1}{8}$	8	$0\frac{1}{8}$	2	$10\frac{1}{8}$	9	$0\frac{3}{4}$
1	$10\frac{1}{4}$	5	$11\frac{1}{2}$	2	$2\frac{1}{4}$	7	0	2	$6\frac{1}{4}$	8	$0\frac{1}{2}$	2	$10\frac{1}{4}$	9	$1\frac{1}{8}$
1	$10\frac{3}{8}$	6	$0\frac{7}{8}$	2	$2\frac{3}{8}$	7	$0\frac{3}{8}$	2	$6\frac{3}{8}$	8	1	2	$10\frac{3}{8}$	9	$1\frac{1}{2}$
1	$10\frac{1}{2}$	6	$0\frac{1}{4}$	2	$2\frac{1}{2}$	7	$0\frac{3}{4}$	2	$6\frac{1}{2}$	8	$1\frac{3}{8}$	2	$10\frac{1}{2}$	9	$1\frac{7}{8}$
1	$10\frac{5}{8}$	6	$0\frac{5}{8}$	2	$2\frac{5}{8}$	7	$1\frac{1}{8}$	2	$6\frac{5}{8}$	8	$1\frac{3}{4}$	2	$10\frac{5}{8}$	9	$2\frac{3}{8}$
1	$10\frac{3}{4}$	6	1	2	$2\frac{3}{4}$	7	$1\frac{1}{2}$	2	$6\frac{3}{4}$	8	$2\frac{1}{8}$	2	$10\frac{3}{4}$	9	$2\frac{3}{4}$
1	$10\frac{7}{8}$	6	$1\frac{3}{8}$	2	$2\frac{7}{8}$	7	2	2	$6\frac{7}{8}$	8	$2\frac{1}{2}$	2	$10\frac{7}{8}$	9	$3\frac{1}{8}$
1	11	6	$1\frac{3}{4}$	2	3	7	$2\frac{3}{8}$	2	7	8	$2\frac{7}{8}$	2	11	9	$3\frac{1}{2}$
1	$11\frac{1}{8}$	6	$2\frac{1}{4}$	2	$3\frac{1}{8}$	7	$2\frac{3}{4}$	2	$7\frac{1}{8}$	8	$3\frac{3}{8}$	2	$11\frac{1}{8}$	9	$3\frac{7}{8}$
1	$11\frac{1}{4}$	6	$2\frac{5}{8}$	2	$3\frac{1}{4}$	7	$3\frac{1}{8}$	2	$7\frac{1}{4}$	8	$3\frac{3}{4}$	2	$11\frac{1}{4}$	9	$4\frac{1}{4}$
1	$11\frac{3}{8}$	6	3	2	$3\frac{3}{8}$	7	$3\frac{1}{2}$	2	$7\frac{3}{8}$	8	$4\frac{1}{8}$	2	$11\frac{3}{8}$	9	$4\frac{5}{8}$
1	$11\frac{1}{2}$	6	$3\frac{3}{8}$	2	$3\frac{1}{2}$	7	$3\frac{7}{8}$	2	$7\frac{1}{2}$	8	$4\frac{1}{2}$	2	$11\frac{1}{2}$	9	5
1	$11\frac{5}{8}$	6	$3\frac{3}{4}$	2	$3\frac{5}{8}$	7	$4\frac{3}{8}$	2	$7\frac{5}{8}$	8	$4\frac{7}{8}$	2	$11\frac{5}{8}$	9	$5\frac{1}{2}$
1	$11\frac{3}{4}$	6	$4\frac{1}{8}$	2	$3\frac{3}{4}$	7	$4\frac{3}{4}$	2	$7\frac{3}{4}$	8	$5\frac{1}{4}$	2	$11\frac{3}{4}$	9	$5\frac{7}{8}$
1	$11\frac{7}{8}$	6	$4\frac{1}{2}$	2	$3\frac{7}{8}$	7	$5\frac{1}{8}$	2	$7\frac{7}{8}$	8	$5\frac{5}{8}$	2	$11\frac{7}{8}$	9	$6\frac{1}{4}$
2	0	6	$4\frac{7}{8}$	2	4	7	$5\frac{1}{2}$	2	8	8	6	3	0	9	$6\frac{5}{8}$
2	$0\frac{1}{8}$	6	$5\frac{3}{8}$	2	$4\frac{1}{8}$	7	$5\frac{7}{8}$	2	$8\frac{1}{8}$	8	$6\frac{1}{2}$	3	$0\frac{1}{8}$	9	7
2	$0\frac{1}{4}$	6	$5\frac{3}{4}$	2	$4\frac{1}{4}$	7	$6\frac{1}{4}$	2	$8\frac{1}{4}$	8	$6\frac{7}{8}$	3	$0\frac{1}{4}$	9	$7\frac{3}{8}$
2	$0\frac{3}{8}$	6	$6\frac{1}{8}$	2	$4\frac{3}{8}$	7	$6\frac{5}{8}$	2	$8\frac{3}{8}$	8	$7\frac{1}{4}$	3	$0\frac{3}{8}$	9	$7\frac{7}{8}$
2	$0\frac{1}{2}$	6	$6\frac{1}{2}$	2	$4\frac{1}{2}$	7	7	2	$8\frac{1}{2}$	8	$7\frac{5}{8}$	3	$0\frac{1}{2}$	9	$8\frac{1}{4}$
2	$0\frac{5}{8}$	6	$6\frac{7}{8}$	2	$4\frac{5}{8}$	7	$7\frac{1}{2}$	2	$8\frac{5}{8}$	8	8	3	$0\frac{5}{8}$	9	$8\frac{5}{8}$
2	$0\frac{3}{4}$	6	$7\frac{1}{4}$	2	$4\frac{3}{4}$	7	$7\frac{7}{8}$	2	$8\frac{3}{4}$	8	$8\frac{3}{8}$	3	$0\frac{3}{4}$	9	9
2	$0\frac{7}{8}$	6	$7\frac{5}{8}$	2	$4\frac{7}{8}$	7	$8\frac{1}{4}$	2	$8\frac{7}{8}$	8	$8\frac{7}{8}$	3	$0\frac{7}{8}$	9	$9\frac{3}{8}$
2	1	6	$8\frac{1}{8}$	2	5	7	$8\frac{5}{8}$	2	9	8	$9\frac{1}{4}$	3	1	9	$9\frac{3}{4}$
2	$1\frac{1}{8}$	6	$8\frac{1}{2}$	2	$5\frac{1}{8}$	7	9	2	$9\frac{1}{8}$	8	$9\frac{5}{8}$	3	$1\frac{1}{8}$	9	$10\frac{1}{8}$
2	$1\frac{1}{4}$	6	$8\frac{7}{8}$	2	$5\frac{1}{4}$	7	$9\frac{3}{8}$	2	$9\frac{1}{4}$	8	10	3	$1\frac{1}{4}$	9	$10\frac{1}{2}$
2	$1\frac{3}{8}$	6	$9\frac{1}{4}$	2	$5\frac{3}{8}$	7	$9\frac{3}{4}$	2	$9\frac{3}{8}$	8	$10\frac{3}{8}$	3	$1\frac{3}{8}$	9	$10\frac{7}{8}$
2	$1\frac{1}{2}$	6	$9\frac{5}{8}$	2	$5\frac{1}{2}$	7	$10\frac{1}{4}$	2	$9\frac{1}{2}$	8	$10\frac{3}{4}$	3	$1\frac{1}{2}$	9	$11\frac{3}{8}$
2	$1\frac{5}{8}$	6	10	2	$5\frac{5}{8}$	7	$10\frac{5}{8}$	2	$9\frac{5}{8}$	8	$11\frac{1}{8}$	3	$1\frac{5}{8}$	9	$11\frac{3}{4}$
2	$1\frac{3}{4}$	6	$10\frac{1}{2}$	2	$5\frac{3}{4}$	7	11	2	$9\frac{3}{4}$	8	$11\frac{1}{2}$	3	$1\frac{3}{4}$	10	$0\frac{1}{8}$
2	$1\frac{7}{8}$	6	$10\frac{7}{8}$	2	$5\frac{7}{8}$	7	$11\frac{3}{8}$	2	$9\frac{7}{8}$	9	0	3	$1\frac{7}{8}$	10	$0\frac{1}{2}$

For Angle Iron measuring ¼ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
3	2	10	0 7/8	3	6	11	1 1/2	3	10	12	2	4	2	13	2 5/8
3	2 1/8	10	1 3/8	3	6 1/8	11	1 7/8	3	10 1/8	12	2 3/8	4	2 1/8	13	3
3	2 1/4	10	1 3/4	3	6 1/4	11	2 1/4	3	10 1/4	12	2 7/8	4	2 1/4	13	3 3/8
3	2 3/8	10	2 1/8	3	6 3/8	11	2 5/8	3	10 3/8	12	3 1/4	4	2 3/8	13	3 3/4
3	2 1/2	10	2 1/2	3	6 1/2	11	3	3	10 1/2	12	3 5/8	4	2 1/2	13	4 1/4
3	2 5/8	10	2 7/8	3	6 5/8	11	3 1/2	3	10 5/8	12	4	4	2 5/8	13	4 5/8
3	2 3/4	10	3 1/4	3	6 3/4	11	3 7/8	3	10 3/4	12	4 3/8	4	2 3/4	13	5
3	2 7/8	10	3 5/8	3	6 7/8	11	4 1/4	3	10 7/8	12	4 3/4	4	2 7/8	13	5 3/8
3	3	10	4	3	7	11	4 5/8	3	11	12	5 1/4	4	3	13	5 3/4
3	3 1/8	10	4 1/8	3	7 1/8	11	5	3	11 1/8	12	5 5/8	4	3 1/8	13	6 1/8
3	3 1/4	10	4 7/8	3	7 1/4	11	5 3/8	3	11 1/4	12	6	4	3 1/4	13	6 1/2
3	3 3/8	10	5 1/4	3	7 3/8	11	5 3/4	3	11 3/8	12	6 3/8	4	3 3/8	13	7
3	3 1/2	10	5 5/8	3	7 1/2	11	6 1/4	3	11 1/2	12	6 3/4	4	3 1/2	13	7 3/8
3	3 5/8	10	6	3	7 5/8	11	6 5/8	3	11 5/8	12	7 1/8	4	3 5/8	13	7 3/4
3	3 3/4	10	6 3/8	3	7 3/4	11	7	3	11 3/4	12	7 1/2	4	3 3/4	13	8 1/8
3	3 7/8	10	6 7/8	3	7 7/8	11	7 3/8	3	11 7/8	12	7 7/8	4	3 7/8	13	8 1/2
3	4	10	7 1/4	3	8	11	7 3/4	4	0	12	8 3/8	4	4	13	8 7/8
3	4 1/8	10	7 5/8	3	8 1/8	11	8 1/8	4	0 1/8	12	8 3/4	4	4 1/8	13	9 1/4
3	4 1/4	10	8	3	8 1/4	11	8 1/2	4	0 1/4	12	9 1/8	4	4 1/4	13	9 5/8
3	4 3/8	10	8 3/8	3	8 3/8	11	8 7/8	4	0 3/8	12	9 1/2	4	4 3/8	13	10 1/8
3	4 1/2	10	8 3/4	3	8 1/2	11	9 3/8	4	0 1/2	12	9 7/8	4	4 1/2	13	10 1/2
3	4 5/8	10	9 1/8	3	8 5/8	11	9 3/4	4	0 5/8	12	10 3/8	4	4 5/8	13	10 7/8
3	4 3/4	10	9 1/2	3	8 3/4	11	10 1/8	4	0 3/4	12	10 3/4	4	4 3/4	13	11 1/4
3	4 7/8	10	9 7/8	3	8 7/8	11	10 1/2	4	0 7/8	12	11 1/8	4	4 7/8	13	11 5/8
3	5	10	10 3/8	3	9	11	10 7/8	4	1	12	11 1/2	4	5	14	0
3	5 1/8	10	10 3/4	3	9 1/8	11	11 1/4	4	1 1/8	12	11 7/8	4	5 1/8	14	0 3/8
3	5 1/4	10	11 1/8	3	9 1/4	11	11 5/8	4	1 1/4	13	0 1/4	4	5 1/4	14	0 7/8
3	5 3/8	10	11 1/2	3	9 3/8	12	0 1/8	4	1 3/8	13	0 5/8	4	5 3/8	14	1 1/4
3	5 1/2	10	11 7/8	3	9 1/2	12	0 1/2	4	1 1/2	13	1	4	5 1/2	14	1 5/8
3	5 5/8	11	0 3/8	3	9 5/8	12	0 7/8	4	1 5/8	13	1 1/2	4	5 5/8	14	2
3	5 3/4	11	0 3/4	3	9 3/4	12	1 1/4	4	1 3/4	13	1 7/8	4	5 3/4	14	2 3/8
3	5 7/8	11	1 1/8	3	9 7/8	12	1 5/8	4	1 7/8	13	2 1/4	4	5 7/8	14	2 3/4

s or Angle Iron measuring ¼ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
4	6	14	3 1/8	4	10	15	3 3/4	5	2	16	4 3/8	5	6	17	4 7/8
4	6 1/8	14	3 1/2	4	10 1/8	15	4 1/8	5	2 1/8	16	4 3/4	5	6 1/8	17	5 1/4
4	6 1/4	14	4	4	10 1/4	15	4 1/2	5	2 1/4	16	5 1/8	5	6 1/4	17	5 5/8
4	6 3/8	14	4 3/8	4	10 3/8	15	4 7/8	5	2 3/8	16	5 1/2	5	6 3/8	17	6
4	6 1/2	14	4 3/4	4	10 1/2	15	5 3/8	5	2 1/2	16	5 7/8	5	6 1/2	17	6 1/2
4	6 5/8	14	5 1/8	4	10 5/8	15	5 3/4	5	2 5/8	16	6 1/4	5	6 5/8	17	6 7/8
4	6 3/4	14	5 1/2	4	10 3/4	15	6 1/8	5	2 3/4	16	6 5/8	5	6 3/4	17	7 1/4
4	6 7/8	14	5 7/8	4	10 7/8	15	6 1/2	5	2 7/8	16	7	5	6 7/8	17	7 5/8
4	7	14	6 3/8	4	11	15	6 7/8	5	3	16	7 1/2	5	7	17	8
4	7 1/8	14	6 3/4	4	11 1/8	15	7 1/4	5	3 1/8	16	7 7/8	5	7 1/8	17	8 3/8
4	7 1/4	14	7 1/8	4	11 1/4	15	7 3/4	5	3 1/4	16	8 1/4	5	7 1/4	17	8 7/8
4	7 3/8	14	7 1/2	4	11 3/8	15	8 1/8	5	3 3/8	16	8 5/8	5	7 3/8	17	9 1/4
4	7 1/2	14	7 7/8	4	11 1/2	15	8 1/2	5	3 1/2	16	9	5	7 1/2	17	9 5/8
4	7 5/8	14	8 1/4	4	11 5/8	15	8 7/8	5	3 5/8	16	9 3/8	5	7 5/8	17	10
4	7 3/4	14	8 3/4	4	11 3/4	15	9 1/4	5	3 3/4	16	9 7/8	5	7 3/4	17	10 3/8
4	7 7/8	14	9 1/8	4	11 7/8	15	9 5/8	5	3 7/8	16	10 1/4	5	7 7/8	17	10 3/4
4	8	14	9 1/2	5	0	15	10	5	4	16	10 5/8	5	8	17	11 1/8
4	8 1/8	14	9 7/8	5	0 1/8	15	10 3/8	5	4 1/8	16	11	5	8 1/8	17	11 1/2
4	8 1/4	14	10 1/4	5	0 1/4	15	10 7/8	5	4 1/4	16	11 3/8	5	8 1/4	18	0
4	8 3/8	14	10 5/8	5	0 3/8	15	11 1/4	5	4 3/8	16	11 3/4	5	8 3/8	18	0 3/8
4	8 1/2	14	11	5	0 1/2	15	11 5/8	5	4 1/2	17	0 1/8	5	8 1/2	18	0 3/4
4	8 5/8	14	11 1/2	5	0 5/8	16	0	5	4 5/8	17	0 5/8	5	8 5/8	18	1 1/8
4	8 3/4	14	11 7/8	5	0 3/4	16	0 3/8	5	4 3/4	17	1	5	8 3/4	18	1 1/2
4	8 7/8	15	0 1/4	5	0 7/8	16	0 3/4	5	4 7/8	17	1 3/8	5	8 7/8	18	1 7/8
4	9	15	0 5/8	5	1	16	1 1/8	5	5	17	1 3/4	5	9	18	2 3/8
4	9 1/8	15	1	5	1 1/8	16	1 5/8	5	5 1/8	17	2 1/8	5	9 1/8	18	2 3/4
4	9 1/4	15	1 3/8	5	1 1/4	16	2	5	5 1/4	17	2 1/2	5	9 1/4	18	3 1/8
4	9 3/8	15	1 7/8	5	1 3/8	16	2 3/8	5	5 3/8	17	2 7/8	5	9 3/8	18	3 1/2
4	9 1/2	15	2 1/4	5	1 1/2	16	2 3/4	5	5 1/2	17	3 3/8	5	9 1/2	18	3 7/8
4	9 5/8	15	2 5/8	5	1 5/8	16	3 1/8	5	5 5/8	17	3 3/4	5	9 5/8	18	4 1/4
4	9 3/4	15	3	5	1 3/4	16	3 1/2	5	5 3/4	17	4 1/8	5	9 3/4	18	4 5/8
4	9 7/8	15	3 3/8	5	1 7/8	16	3 7/8	5	5 7/8	17	4 1/2	5	9 7/8	18	5

For ANGLE IRON measuring $\frac{1}{4}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
5	10	18	$5\frac{1}{2}$	6	2	19	6	6	6	20	$6\frac{5}{8}$	6	10	21	$7\frac{1}{8}$
5	$10\frac{1}{8}$	18	$5\frac{7}{8}$	6	$2\frac{1}{8}$	19	$6\frac{3}{8}$	6	$6\frac{1}{8}$	20	7	6	$10\frac{1}{8}$	21	$7\frac{5}{8}$
5	$10\frac{1}{4}$	18	$6\frac{1}{4}$	6	$2\frac{1}{4}$	19	$6\frac{7}{8}$	6	$6\frac{1}{4}$	20	$7\frac{3}{8}$	6	$10\frac{1}{4}$	21	8
5	$10\frac{3}{8}$	18	$6\frac{5}{8}$	6	$2\frac{3}{8}$	19	$7\frac{1}{4}$	6	$6\frac{3}{8}$	20	$7\frac{3}{4}$	6	$10\frac{3}{8}$	21	$8\frac{3}{8}$
5	$10\frac{1}{2}$	18	7	6	$2\frac{1}{2}$	19	$7\frac{5}{8}$	6	$6\frac{1}{2}$	20	$8\frac{1}{8}$	6	$10\frac{1}{2}$	21	$8\frac{3}{4}$
5	$10\frac{5}{8}$	18	$7\frac{3}{8}$	6	$2\frac{5}{8}$	19	8	6	$6\frac{5}{8}$	20	$8\frac{1}{2}$	6	$10\frac{5}{8}$	21	$9\frac{1}{8}$
5	$10\frac{3}{4}$	18	$7\frac{7}{8}$	6	$2\frac{3}{4}$	19	$8\frac{3}{8}$	6	$6\frac{3}{4}$	20	9	6	$10\frac{3}{4}$	21	$9\frac{1}{2}$
5	$10\frac{7}{8}$	18	$8\frac{1}{4}$	6	$2\frac{7}{8}$	19	$8\frac{3}{4}$	6	$6\frac{7}{8}$	20	$9\frac{3}{8}$	6	$10\frac{7}{8}$	21	$9\frac{7}{8}$
5	11	18	$8\frac{5}{8}$	6	3	19	$9\frac{1}{8}$	6	7	20	$9\frac{3}{4}$	6	11	21	$10\frac{3}{8}$
5	$11\frac{1}{8}$	18	9	6	$3\frac{1}{8}$	19	$9\frac{5}{8}$	6	$7\frac{1}{8}$	20	$10\frac{1}{8}$	6	$11\frac{1}{8}$	21	$10\frac{3}{4}$
5	$11\frac{1}{4}$	18	$9\frac{3}{8}$	6	$3\frac{1}{4}$	19	10	6	$7\frac{1}{4}$	20	$10\frac{1}{2}$	6	$11\frac{1}{4}$	21	$11\frac{1}{8}$
5	$11\frac{3}{8}$	18	$9\frac{3}{4}$	6	$3\frac{3}{8}$	19	$10\frac{3}{8}$	6	$7\frac{3}{8}$	20	$10\frac{7}{8}$	6	$11\frac{3}{8}$	21	$11\frac{1}{2}$
5	$11\frac{1}{2}$	18	$10\frac{1}{8}$	6	$3\frac{1}{2}$	19	$10\frac{3}{4}$	6	$7\frac{1}{2}$	20	$11\frac{3}{8}$	6	$11\frac{1}{2}$	21	$11\frac{7}{8}$
5	$11\frac{5}{8}$	18	$10\frac{1}{2}$	6	$3\frac{5}{8}$	19	$11\frac{1}{8}$	6	$7\frac{5}{8}$	20	$11\frac{3}{4}$	6	$11\frac{5}{8}$	22	$0\frac{1}{4}$
5	$11\frac{3}{4}$	18	11	6	$3\frac{3}{4}$	19	$11\frac{1}{2}$	6	$7\frac{3}{4}$	21	$0\frac{1}{8}$	6	$11\frac{3}{4}$	22	$0\frac{5}{8}$
5	$11\frac{7}{8}$	18	$11\frac{3}{8}$	6	$3\frac{7}{8}$	19	$11\frac{7}{8}$	6	$7\frac{7}{8}$	21	$0\frac{1}{2}$	6	$11\frac{7}{8}$	22	1
6	0	18	$11\frac{3}{4}$	6	4	20	$0\frac{3}{8}$	6	8	21	$0\frac{7}{8}$	7	0	22	$1\frac{1}{2}$
6	$0\frac{1}{8}$	19	$0\frac{1}{8}$	6	$4\frac{1}{8}$	20	$0\frac{3}{4}$	6	$8\frac{1}{8}$	21	$1\frac{1}{4}$	7	$0\frac{1}{8}$	22	$1\frac{7}{8}$
6	$0\frac{1}{4}$	19	$0\frac{1}{2}$	6	$4\frac{1}{4}$	20	$1\frac{1}{8}$	6	$8\frac{1}{4}$	21	$1\frac{5}{8}$	7	$0\frac{1}{4}$	22	$2\frac{1}{4}$
6	$0\frac{3}{8}$	19	$0\frac{7}{8}$	6	$4\frac{3}{8}$	20	$1\frac{1}{2}$	6	$8\frac{3}{8}$	21	2	7	$0\frac{3}{8}$	22	$2\frac{5}{8}$
6	$0\frac{1}{2}$	19	$1\frac{3}{8}$	6	$4\frac{1}{2}$	20	$1\frac{7}{8}$	6	$8\frac{1}{2}$	21	$2\frac{1}{2}$	7	$0\frac{1}{2}$	22	3
6	$0\frac{5}{8}$	19	$1\frac{3}{4}$	6	$4\frac{5}{8}$	20	$2\frac{1}{4}$	6	$8\frac{5}{8}$	21	$2\frac{7}{8}$	7	$0\frac{5}{8}$	22	$3\frac{3}{8}$
6	$0\frac{3}{4}$	19	$2\frac{1}{8}$	6	$4\frac{3}{4}$	20	$2\frac{5}{8}$	6	$8\frac{3}{4}$	21	$3\frac{1}{4}$	7	$0\frac{3}{4}$	22	$3\frac{7}{8}$
6	$0\frac{7}{8}$	19	$2\frac{1}{2}$	6	$4\frac{7}{8}$	20	3	6	$8\frac{7}{8}$	21	$3\frac{5}{8}$	7	$0\frac{7}{8}$	22	$4\frac{1}{4}$
6	1	19	$2\frac{7}{8}$	6	5	20	$3\frac{1}{2}$	6	9	21	4	7	1	22	$4\frac{5}{8}$
6	$1\frac{1}{8}$	19	$3\frac{1}{4}$	6	$5\frac{1}{8}$	20	$3\frac{7}{8}$	6	$9\frac{1}{8}$	21	$4\frac{3}{8}$	7	$1\frac{1}{8}$	22	5
6	$1\frac{1}{4}$	19	$3\frac{5}{8}$	6	$5\frac{1}{4}$	20	$4\frac{1}{4}$	6	$9\frac{1}{4}$	21	$4\frac{3}{4}$	7	$1\frac{1}{4}$	22	$5\frac{3}{8}$
6	$1\frac{3}{8}$	19	4	6	$5\frac{3}{8}$	20	$4\frac{5}{8}$	6	$9\frac{3}{8}$	21	$5\frac{1}{8}$	7	$1\frac{3}{8}$	22	$5\frac{3}{4}$
6	$1\frac{1}{2}$	19	$4\frac{1}{2}$	6	$5\frac{1}{2}$	20	5	6	$9\frac{1}{2}$	21	$5\frac{1}{2}$	7	$1\frac{1}{2}$	22	$6\frac{1}{8}$
6	$1\frac{5}{8}$	19	$4\frac{7}{8}$	6	$5\frac{5}{8}$	20	$5\frac{3}{8}$	6	$9\frac{5}{8}$	21	6	7	$1\frac{5}{8}$	22	$6\frac{1}{2}$
6	$1\frac{3}{4}$	19	$5\frac{1}{4}$	6	$5\frac{3}{4}$	20	$5\frac{7}{8}$	6	$9\frac{3}{4}$	21	$6\frac{3}{8}$	7	$1\frac{3}{4}$	22	7
6	$1\frac{7}{8}$	19	$5\frac{5}{8}$	6	$5\frac{7}{8}$	20	$6\frac{1}{4}$	6	$9\frac{7}{8}$	21	$6\frac{3}{4}$	7	$1\frac{7}{8}$	22	$7\frac{3}{8}$

For Angle Iron measuring ¼ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
4	6	14	3 1/8	4	10	15	3 3/4	5	2	16	4 3/8	5	6	17	4 7/8
4	6 1/8	14	3 1/2	4	10 1/8	15	4 1/8	5	2 1/8	16	4 3/4	5	6 1/8	17	5 1/4
4	6 1/4	14	4	4	10 1/4	15	4 1/2	5	2 1/4	16	5 1/8	5	6 1/4	17	5 5/8
4	6 3/8	14	4 3/8	4	10 3/8	15	4 7/8	5	2 3/8	16	5 1/2	5	6 3/8	17	6
4	6 1/2	14	4 3/4	4	10 1/2	15	5 3/8	5	2 1/2	16	5 7/8	5	6 1/2	17	6 1/2
4	6 5/8	14	5 1/8	4	10 5/8	15	5 3/4	5	2 5/8	16	6 1/4	5	6 5/8	17	6 7/8
4	6 3/4	14	5 1/2	4	10 3/4	15	6 1/8	5	2 3/4	16	6 5/8	5	6 3/4	17	7 1/4
4	6 7/8	14	5 7/8	4	10 7/8	15	6 1/2	5	2 7/8	16	7	5	6 7/8	17	7 5/8
4	7	14	6 3/8	4	11	15	6 7/8	5	3	16	7 1/2	5	7	17	8
4	7 1/8	14	6 3/4	4	11 1/8	15	7 1/4	5	3 1/8	16	7 7/8	5	7 1/8	17	8 3/8
4	7 1/4	14	7 1/8	4	11 1/4	15	7 3/4	5	3 1/4	16	8 1/4	5	7 1/4	17	8 7/8
4	7 3/8	14	7 1/2	4	11 3/8	15	8 1/8	5	3 3/8	16	8 5/8	5	7 3/8	17	9 1/4
4	7 1/2	14	7 7/8	4	11 1/2	15	8 1/2	5	3 1/2	16	9	5	7 1/2	17	9 5/8
4	7 5/8	14	8 1/4	4	11 5/8	15	8 7/8	5	3 5/8	16	9 3/8	5	7 5/8	17	10
4	7 3/4	14	8 3/4	4	11 3/4	15	9 1/4	5	3 3/4	16	9 7/8	5	7 3/4	17	10 3/8
4	7 7/8	14	9 1/8	4	11 7/8	15	9 5/8	5	3 7/8	16	10 1/4	5	7 7/8	17	10 3/4
4	8	14	9 1/2	5	0	15	10	5	4	16	10 5/8	5	8	17	11 1/8
4	8 1/8	14	9 7/8	5	0 1/8	15	10 3/8	5	4 1/8	16	11	5	8 1/8	17	11 1/2
4	8 1/4	14	10 1/4	5	0 1/4	15	10 7/8	5	4 1/4	16	11 3/8	5	8 1/4	18	0
4	8 3/8	14	10 5/8	5	0 3/8	15	11 1/4	5	4 3/8	16	11 3/4	5	8 3/8	18	0 3/8
4	8 1/2	14	11	5	0 1/2	15	11 5/8	5	4 1/2	17	0 1/8	5	8 1/2	18	0 3/4
4	8 5/8	14	11 1/2	5	0 5/8	16	0	5	4 5/8	17	0 5/8	5	8 5/8	18	1 1/8
4	8 3/4	14	11 7/8	5	0 3/4	16	0 3/8	5	4 3/4	17	1	5	8 3/4	18	1 1/2
4	8 7/8	15	0 1/4	5	0 7/8	16	0 3/4	5	4 7/8	17	1 3/8	5	8 7/8	18	1 7/8
4	9	15	0 5/8	5	1	16	1 1/8	5	5	17	1 3/4	5	9	18	2 3/8
4	9 1/8	15	1	5	1 1/8	16	1 5/8	5	5 1/8	17	2 1/8	5	9 1/8	18	2 3/4
4	9 1/4	15	1 3/8	5	1 1/4	16	2	5	5 1/4	17	2 1/2	5	9 1/4	18	3 1/8
4	9 3/8	15	1 7/8	5	1 3/8	16	2 3/8	5	5 3/8	17	2 7/8	5	9 3/8	18	3 1/2
4	9 1/2	15	2 1/4	5	1 1/2	16	2 3/4	5	5 1/2	17	3 3/8	5	9 1/2	18	3 7/8
4	9 5/8	15	2 5/8	5	1 5/8	16	3 1/8	5	5 5/8	17	3 3/4	5	9 5/8	18	4 1/4
4	9 3/4	15	3	5	1 3/4	16	3 1/2	5	5 3/4	17	4 1/8	5	9 3/4	18	4 5/8
4	9 7/8	15	3 3/8	5	1 7/8	16	3 7/8	5	5 7/8	17	4 1/2	5	9 7/8	18	5

For ANGLE IRON measuring ¼ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
5	10	18	5½	6	2	19	6	6	6	20	6⅝	6	10	21	7⅛
5	10⅛	18	5⅞	6	2⅛	19	6⅜	6	6⅛	20	7	6	10⅛	21	7⅝
5	10¼	18	6¼	6	2¼	19	6⅞	6	6¼	20	7⅜	6	10¼	21	8
5	10⅜	18	6⅝	6	2⅜	19	7¼	6	6⅜	20	7¾	6	10⅜	21	8⅜
5	10½	18	7	6	2½	19	7⅝	6	6½	20	8⅛	6	10½	21	8¾
5	10⅝	18	7⅜	6	2⅝	19	8	6	6⅝	20	8½	6	10⅝	21	9⅛
5	10¾	18	7⅞	6	2¾	19	8⅜	6	6¾	20	9	6	10¾	21	9½
5	10⅞	18	8¼	6	2⅞	19	8¾	6	6⅞	20	9⅜	6	10⅞	21	9⅞
5	11	18	8⅝	6	3	19	9⅛	6	7	20	9¾	6	11	21	10⅜
5	11⅛	18	9	6	3⅛	19	9⅝	6	7⅛	20	10⅛	6	11⅛	21	10¾
5	11¼	18	9⅜	6	3¼	19	10	6	7¼	20	10½	6	11¼	21	11⅛
5	11⅜	18	9¾	6	3⅜	19	10⅜	6	7⅜	20	10⅞	6	11⅜	21	11½
5	11½	18	10⅛	6	3½	19	10¾	6	7½	20	11⅜	6	11½	21	11⅞
5	11⅝	18	10½	6	3⅝	19	11⅛	6	7⅝	20	11¾	6	11⅝	22	0¼
5	11¾	18	11	6	3¾	19	11½	6	7¾	21	0⅛	6	11¾	22	0⅝
5	11⅞	18	11⅜	6	3⅞	19	11⅞	6	7⅞	21	0½	6	11⅞	22	1
6	0	18	11¾	6	4	20	0⅜	6	8	21	0⅞	7	0	22	1½
6	0⅛	19	0⅛	6	4⅛	20	0¾	6	8⅛	21	1¼	7	0⅛	22	1⅞
6	0¼	19	0½	6	4¼	20	1⅛	6	8¼	21	1⅝	7	0¼	22	2¼
6	0⅜	19	0⅞	6	4⅜	20	1½	6	8⅜	21	2	7	0⅜	22	2⅝
6	0½	19	1⅜	6	4½	20	1⅞	6	8½	21	2½	7	0½	22	3
6	0⅝	19	1¾	6	4⅝	20	2¼	6	8⅝	21	2⅞	7	0⅝	22	3⅜
6	0¾	19	2⅛	6	4¾	20	2⅝	6	8¾	21	3⅛	7	0¾	22	3⅞
6	0⅞	19	2½	6	4⅞	20	3	6	8⅞	21	3⅝	7	0⅞	22	4¼
6	1	19	2⅞	6	5	20	3½	6	9	21	4	7	1	22	4⅝
6	1⅛	19	3¼	6	5⅛	20	3⅞	6	9⅛	21	4⅜	7	1⅛	22	5
6	1¼	19	3⅝	6	5¼	20	4¼	6	9¼	21	4¾	7	1¼	22	5⅜
6	1⅜	19	4	6	5⅜	20	4⅝	6	9⅜	21	5⅛	7	1⅜	22	5¾
6	1½	19	4½	6	5½	20	5	6	9½	21	5½	7	1½	22	6⅛
6	1⅝	19	4⅞	6	5⅝	20	5⅜	6	9⅝	21	6	7	1⅝	22	6½
6	1¾	19	5¼	6	5¾	20	5⅞	6	9¾	21	6⅜	7	1¾	22	7
6	1⅞	19	5⅝	6	5⅞	20	6¼	6	9⅞	21	6¾	7	1⅞	22	7⅜

For Angle Iron measuring ¼ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
7	2	22	7¾	7	6	23	8¼	7	10	24	8⅞	8	2	25	9⅛
7	2⅛	22	8⅛	7	6⅛	23	8¾	7	10⅛	24	9¼	8	2⅛	25	9⅞
7	2¼	22	8½	7	6¼	23	9⅛	7	10¼	24	9⅝	8	2¼	25	10¼
7	2⅜	22	8⅞	7	6⅜	23	9½	7	10⅜	24	10	8	2⅜	25	10⅝
7	2½	22	9¼	7	6½	23	9⅞	7	10½	24	10½	8	2½	25	11
7	2⅝	22	9¾	7	6⅝	23	10¼	7	10⅝	24	10⅞	8	2⅝	25	11⅜
7	2¾	22	10⅛	7	6¾	23	10⅝	7	10¾	24	11¼	8	2¾	25	11¾
7	2⅞	22	10½	7	6⅞	23	11	7	10⅞	24	11⅝	8	2⅞	26	0⅛
7	3	22	10⅞	7	7	23	11½	7	11	25	0	8	3	26	0⅝
7	3⅛	22	11¼	7	7⅛	23	11⅞	7	11⅛	25	0⅜	8	3⅛	26	1
7	3¼	22	11⅝	7	7¼	24	0¼	7	11¼	25	0¾	8	3¼	26	1⅜
7	3⅜	23	0	7	7⅜	24	0⅝	7	11⅜	25	1¼	8	3⅜	26	1¾
7	3½	23	0½	7	7½	24	1	7	11½	25	1⅝	8	3½	26	2⅛
7	3⅝	23	0⅞	7	7⅝	24	1⅜	7	11⅝	25	2	8	3⅝	26	2½
7	3¾	23	1¼	7	7¾	24	1¾	7	11¾	25	2⅜	8	3¾	26	2⅞
7	3⅞	23	1⅝	7	7⅞	24	2¼	7	11⅞	25	2¾	8	3⅞	26	3⅜
7	4	23	2	7	8	24	2⅝	8	0	25	3⅛	8	4	26	3¾
7	4⅛	23	2⅜	7	8⅛	24	3	8	0⅛	25	3½	8	4⅛	26	4⅛
7	4¼	23	2¾	7	8¼	24	3⅜	8	0¼	25	3⅞	8	4¼	26	4½
7	4⅜	23	3¼	7	8⅜	24	3¾	8	0⅜	25	4⅜	8	4⅜	26	4⅞
7	4½	23	3⅝	7	8½	24	4⅛	8	0½	25	4¾	8	4½	26	5¼
7	4⅝	23	4	7	8⅝	24	4½	8	0⅝	25	5⅛	8	4⅝	26	5⅝
7	4¾	23	4⅜	7	8¾	24	4⅞	8	0¾	25	5½	8	4¾	26	6
7	4⅞	23	4¾	7	8⅞	24	5⅜	8	0⅞	25	5⅞	8	4⅞	26	6½
7	5	23	5⅛	7	9	24	5¾	8	1	25	6¼	8	5	26	6⅞
7	5⅛	23	5½	7	9⅛	24	6⅛	8	1⅛	25	6⅝	8	5⅛	26	7¼
7	5¼	23	6	7	9¼	24	6½	8	1¼	25	7	8	5¼	26	7⅝
7	5⅜	23	6⅜	7	9⅜	24	6⅞	8	1⅜	25	7½	8	5⅜	26	8
7	5½	23	6¾	7	9½	24	7¼	8	1½	25	7⅞	8	5½	26	8⅜
7	5⅝	23	7⅛	7	9⅝	24	7⅝	8	1⅝	25	8¼	8	5⅝	26	8⅞
7	5¾	23	7½	7	9¾	24	8	8	1¾	25	8⅝	8	5¾	26	9¼
7	5⅞	23	7⅞	7	9⅞	24	8½	8	1⅞	25	9	8	5⅞	26	9⅝

TABLE II.,

For Angle Iron measuring $\frac{3}{8}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.	LENGTH REQUIRED FOR RING.	INSIDE DIAMETER OF RING.	LENGTH REQUIRED FOR RING.	INSIDE DIAMETER OF RING.	LENGTH REQUIRED FOR RING.	INSIDE DIAMETER OF RING.	LENGTH REQUIRED FOR RING.
IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.
6	1 $9\frac{1}{8}$	0 10	2 $9\frac{3}{4}$	1 2	3 $10\frac{3}{8}$	1 6	4 $10\frac{7}{8}$
$6\frac{1}{8}$	1 $9\frac{1}{2}$	0 $10\frac{1}{8}$	2 $10\frac{1}{8}$	1 $2\frac{1}{8}$	3 $10\frac{3}{4}$	1 $6\frac{1}{8}$	4 $11\frac{1}{4}$
$6\frac{1}{4}$	1 $9\frac{7}{8}$	0 $10\frac{1}{4}$	2 $10\frac{1}{2}$	1 $2\frac{1}{4}$	3 $11\frac{1}{8}$	1 $6\frac{1}{4}$	4 $11\frac{5}{8}$
$6\frac{3}{8}$	1 $10\frac{3}{8}$	0 $10\frac{3}{8}$	2 $10\frac{7}{8}$	1 $2\frac{3}{8}$	3 $11\frac{1}{2}$	1 $6\frac{3}{8}$	5 0
$6\frac{1}{2}$	1 $10\frac{3}{4}$	0 $10\frac{1}{2}$	2 $11\frac{3}{8}$	1 $2\frac{1}{2}$	3 $11\frac{7}{8}$	1 $6\frac{1}{2}$	5 $0\frac{3}{8}$
$6\frac{5}{8}$	1 $11\frac{1}{8}$	0 $10\frac{5}{8}$	2 $11\frac{3}{4}$	1 $2\frac{5}{8}$	4 $0\frac{1}{4}$	1 $6\frac{5}{8}$	5 $0\frac{3}{4}$
$6\frac{3}{4}$	1 $11\frac{1}{2}$	0 $10\frac{3}{4}$	3 $0\frac{1}{8}$	1 $2\frac{3}{4}$	4 $0\frac{5}{8}$	1 $6\frac{3}{4}$	5 $1\frac{1}{4}$
$6\frac{7}{8}$	1 $11\frac{7}{8}$	0 $10\frac{7}{8}$	3 $0\frac{1}{2}$	1 $2\frac{7}{8}$	4 1	1 $6\frac{7}{8}$	5 $1\frac{5}{8}$
7	2 $0\frac{3}{8}$	0 11	3 $0\frac{7}{8}$	1 3	4 $1\frac{3}{8}$	1 7	5 2
$7\frac{1}{8}$	2 $0\frac{3}{4}$	0 $11\frac{1}{8}$	3 $1\frac{1}{4}$	1 $3\frac{1}{8}$	4 $1\frac{7}{8}$	1 $7\frac{1}{8}$	5 $2\frac{3}{8}$
$7\frac{1}{4}$	2 $1\frac{1}{8}$	0 $11\frac{1}{4}$	3 $1\frac{5}{8}$	1 $3\frac{1}{4}$	4 $2\frac{1}{4}$	1 $7\frac{1}{4}$	5 $2\frac{3}{4}$
$7\frac{3}{8}$	2 $1\frac{1}{2}$	0 $11\frac{3}{8}$	3 2	1 $3\frac{3}{8}$	4 $2\frac{5}{8}$	1 $7\frac{3}{8}$	5 $3\frac{1}{8}$
$7\frac{1}{2}$	2 $1\frac{7}{8}$	0 $11\frac{1}{2}$	3 $2\frac{1}{2}$	1 $3\frac{1}{2}$	4 3	1 $7\frac{1}{2}$	5 $3\frac{5}{8}$
$7\frac{5}{8}$	2 $2\frac{3}{8}$	0 $11\frac{5}{8}$	3 $2\frac{7}{8}$	1 $3\frac{5}{8}$	4 $3\frac{3}{8}$	1 $7\frac{5}{8}$	5 4
$7\frac{3}{4}$	2 $2\frac{3}{4}$	0 $11\frac{3}{4}$	3 $3\frac{1}{4}$	1 $3\frac{3}{4}$	4 $3\frac{3}{4}$	1 $7\frac{3}{4}$	5 $4\frac{3}{8}$
$7\frac{7}{8}$	2 $3\frac{1}{8}$	0 $11\frac{7}{8}$	3 $3\frac{5}{8}$	1 $3\frac{7}{8}$	4 $4\frac{1}{8}$	1 $7\frac{7}{8}$	5 $4\frac{3}{4}$
8	2 $3\frac{1}{2}$	1 0	3 4	1 4	4 $4\frac{1}{2}$	1 8	5 $5\frac{1}{8}$
$8\frac{1}{8}$	2 $3\frac{7}{8}$	1 $0\frac{1}{8}$	3 $4\frac{3}{8}$	1 $4\frac{1}{8}$	4 5	1 $8\frac{1}{8}$	5 $5\frac{1}{2}$
$8\frac{1}{4}$	2 $4\frac{1}{4}$	1 $0\frac{1}{4}$	3 $4\frac{7}{8}$	1 $4\frac{1}{4}$	4 $5\frac{3}{8}$	1 $8\frac{1}{4}$	5 $5\frac{7}{8}$
$8\frac{3}{8}$	2 $4\frac{5}{8}$	1 $0\frac{3}{8}$	3 $5\frac{1}{4}$	1 $4\frac{3}{8}$	4 $5\frac{3}{4}$	1 $8\frac{3}{8}$	5 $6\frac{3}{8}$
$8\frac{1}{2}$	2 5	1 $0\frac{1}{2}$	3 $5\frac{5}{8}$	1 $4\frac{1}{2}$	4 $6\frac{1}{8}$	1 $8\frac{1}{2}$	5 $6\frac{3}{4}$
$8\frac{5}{8}$	2 $5\frac{1}{2}$	1 $0\frac{5}{8}$	3 6	1 $4\frac{5}{8}$	4 $6\frac{1}{2}$	1 $8\frac{5}{8}$	5 $7\frac{1}{8}$
$8\frac{3}{4}$	2 $5\frac{7}{8}$	1 $0\frac{3}{4}$	3 $6\frac{3}{8}$	1 $4\frac{3}{4}$	4 7	1 $8\frac{3}{4}$	5 $7\frac{1}{2}$
$8\frac{7}{8}$	2 $6\frac{1}{4}$	1 $0\frac{7}{8}$	3 $6\frac{3}{4}$	1 $4\frac{7}{8}$	4 $7\frac{3}{8}$	1 $8\frac{7}{8}$	5 8
9	2 $6\frac{5}{8}$	1 1	3 $7\frac{1}{8}$	1 5	4 $7\frac{3}{4}$	1 9	5 $8\frac{3}{8}$
$9\frac{1}{8}$	2 7	1 $1\frac{1}{8}$	3 $7\frac{5}{8}$	1 $5\frac{1}{8}$	4 $8\frac{1}{8}$	1 $9\frac{1}{8}$	5 $8\frac{3}{4}$
$9\frac{1}{4}$	2 $7\frac{3}{8}$	1 $1\frac{1}{4}$	3 8	1 $5\frac{1}{4}$	4 $8\frac{1}{2}$	1 $9\frac{1}{4}$	5 $9\frac{1}{8}$
$9\frac{3}{8}$	2 $7\frac{3}{4}$	1 $1\frac{3}{8}$	3 $8\frac{3}{8}$	1 $5\frac{3}{8}$	4 $8\frac{7}{8}$	1 $9\frac{3}{8}$	5 $9\frac{1}{2}$
$9\frac{1}{2}$	2 $8\frac{1}{4}$	1 $1\frac{1}{2}$	3 $8\frac{3}{4}$	1 $5\frac{1}{2}$	4 $9\frac{1}{4}$	1 $9\frac{1}{2}$	5 $9\frac{7}{8}$
$9\frac{5}{8}$	2 $8\frac{5}{8}$	1 $1\frac{5}{8}$	3 $9\frac{1}{8}$	1 $5\frac{5}{8}$	4 $9\frac{5}{8}$	1 $9\frac{5}{8}$	5 $10\frac{1}{4}$
$9\frac{3}{4}$	2 9	1 $1\frac{3}{4}$	3 $9\frac{1}{2}$	1 $5\frac{3}{4}$	4 $10\frac{1}{8}$	1 $9\frac{3}{4}$	5 $10\frac{5}{8}$
$9\frac{7}{8}$	2 $9\frac{3}{8}$	1 $1\frac{7}{8}$	3 $9\frac{7}{8}$	1 $5\frac{7}{8}$	4 $10\frac{1}{2}$	1 $9\frac{7}{8}$	5 11

For ANGLE IRON measuring $\frac{3}{8}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
1	10	5	11 1/2	2	2	7	0	2	6	8	0 1/2	2	10	9	1 1/8
1	10 1/8	5	11 7/8	2	2 1/8	7	0 3/8	2	6 1/8	8	1	2	10 1/8	9	1 1/2
1	10 1/4	6	0 1/4	2	2 1/4	7	0 3/4	2	6 1/4	8	1 3/8	2	10 1/4	9	1 7/8
1	10 3/8	6	0 5/8	2	2 3/8	7	1 1/8	2	6 3/8	8	1 3/4	2	10 3/8	9	2 3/8
1	10 1/2	6	1	2	2 1/2	7	1 1/2	2	6 1/2	8	2 1/8	2	10 1/2	9	2 3/4
1	10 5/8	6	1 3/8	2	2 5/8	7	2	2	6 5/8	8	2 1/2	2	10 5/8	9	3 1/8
1	10 3/4	6	1 3/4	2	2 3/4	7	2 3/8	2	6 3/4	8	2 7/8	2	10 3/4	9	3 1/2
1	10 7/8	6	2 1/4	2	2 7/8	7	2 3/4	2	6 7/8	8	3 3/8	2	10 7/8	9	3 7/8
1	11	6	2 5/8	2	3	7	3 1/8	2	7	8	3 3/4	2	11	9	4 1/4
1	11 1/8	6	3	2	3 1/8	7	3 1/2	2	7 1/8	8	4 1/8	2	11 1/8	9	4 5/8
1	11 1/4	6	3 3/8	2	3 1/4	7	3 7/8	2	7 1/4	8	4 1/2	2	11 1/4	9	5
1	11 3/8	6	3 3/4	2	3 3/8	7	4 3/8	2	7 3/8	8	4 7/8	2	11 3/8	9	5 1/2
1	11 1/2	6	4 1/8	2	3 1/2	7	4 3/4	2	7 1/2	8	5 1/4	2	11 1/2	9	5 7/8
1	11 5/8	6	4 1/2	2	3 5/8	7	5 1/8	2	7 5/8	8	5 5/8	2	11 5/8	9	6 1/4
1	11 3/4	6	4 7/8	2	3 3/4	7	5 1/2	2	7 3/4	8	6	2	11 3/4	9	6 5/8
1	11 7/8	6	5 3/8	2	3 7/8	7	5 7/8	2	7 7/8	8	6 1/2	2	11 7/8	9	7
2	0	6	5 3/4	2	4	7	6 1/4	2	8	8	6 7/8	3	0	9	7 3/8
2	0 1/8	6	6 1/8	2	4 1/8	7	6 5/8	2	8 1/8	8	7 1/4	3	0 1/8	9	7 7/8
2	0 1/4	6	6 1/2	2	4 1/4	7	7	2	8 1/4	8	7 5/8	3	0 1/4	9	8 1/4
2	0 3/8	6	6 7/8	2	4 3/8	7	7 1/2	2	8 3/8	8	8	3	0 3/8	9	8 5/8
2	0 1/2	6	7 1/4	2	4 1/2	7	7 7/8	2	8 1/2	8	8 3/8	3	0 1/2	9	9
2	0 5/8	6	7 5/8	2	4 5/8	7	8 1/4	2	8 5/8	8	8 7/8	3	0 5/8	9	9 3/8
2	0 3/4	6	8 1/8	2	4 3/4	7	8 5/8	2	8 3/4	8	9 1/4	3	0 3/4	9	9 3/4
2	0 7/8	6	8 1/2	2	4 7/8	7	9	2	8 7/8	8	9 5/8	3	0 7/8	9	10 1/8
2	1	6	8 7/8	2	5	7	9 3/8	2	9	8	10	3	1	9	10 1/2
2	1 1/8	6	9 1/4	2	5 1/8	7	9 3/4	2	9 1/8	8	10 3/8	3	1 1/8	9	10 7/8
2	1 1/4	6	9 5/8	2	5 1/4	7	10 1/4	2	9 1/4	8	10 3/4	3	1 1/4	9	11 3/8
2	1 3/8	6	10	2	5 3/8	7	10 5/8	2	9 3/8	8	11 1/8	3	1 3/8	9	11 3/4
2	1 1/2	6	10 1/2	2	5 1/2	7	11	2	9 1/2	8	11 1/2	3	1 1/2	10	0 1/8
2	1 5/8	6	10 7/8	2	5 5/8	7	11 3/8	2	9 5/8	9	0	3	1 5/8	10	0 1/2
2	1 3/4	6	11 1/4	2	5 3/4	7	11 3/4	2	9 3/4	9	0 3/8	3	1 3/4	10	0 7/8
2	1 7/8	6	11 5/8	2	5 7/8	8	0 1/8	2	9 7/8	9	0 3/4	3	1 7/8	10	1 3/8

For ANGLE IRON measuring $\frac{3}{8}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
3	2	10	1¾	3	6	11	2¼	3	10	12	2⅞	4	2	13	3⅜
3	2⅛	10	2⅛	3	6⅛	11	2⅜	3	10⅛	12	3¼	4	2⅛	13	3¾
3	2¼	10	2½	3	6¼	11	3	3	10¼	12	3⅝	4	2¼	13	4¼
3	2⅜	10	2⅞	3	6⅜	11	3½	3	10⅜	12	4	4	2⅜	13	4⅝
3	2½	10	3¼	3	6½	11	3⅞	3	10½	12	4⅜	4	2½	13	5
3	2⅝	10	3⅝	3	6⅝	11	4¼	3	10⅝	12	4¾	4	2⅝	13	5⅜
3	2¾	10	4	3	6¾	11	4⅝	3	10¾	12	5¼	4	2¾	13	5¾
3	2⅞	10	4½	3	6⅞	11	5	3	10⅞	12	5⅝	4	2⅞	13	6⅛
3	3	10	4⅞	3	7	11	5⅜	3	11	12	6	4	3	13	6⅛
3	3⅛	10	5¼	3	7⅛	11	5¾	3	11⅛	12	6⅜	4	3⅛	13	7
3	3¼	10	5⅝	3	7¼	11	6¼	3	11¼	12	6¾	4	3¼	13	7⅜
3	3⅜	10	6	3	7⅜	11	6⅝	3	11⅜	12	7⅛	4	3⅜	13	7¾
3	3½	10	6⅜	3	7½	11	7	3	11½	12	7½	4	3½	13	8⅛
3	3⅝	10	6⅞	3	7⅝	11	7⅜	3	11⅝	12	7⅞	4	3⅝	13	8½
3	3¾	10	7¼	3	7¾	11	7¾	3	11¾	12	8⅜	4	3¾	13	8⅞
3	3⅞	10	7⅝	3	7⅞	11	8⅛	3	11⅞	12	8¾	4	3⅞	13	9¼
3	4	10	8	3	8	11	8½	4	0	12	9⅛	4	4	13	9⅝
3	4⅛	10	8⅜	3	8⅛	11	8⅞	4	0⅛	12	9½	4	4⅛	13	10⅛
3	4¼	10	8¾	3	8¼	11	9⅜	4	0¼	12	9⅞	4	4¼	13	10⅓
3	4⅜	10	9⅛	3	8⅜	11	9¾	4	0⅜	12	10⅜	4	4⅜	13	10⅞
3	4½	10	9½	3	8½	11	10⅛	4	0½	12	10¾	4	4½	13	11¼
3	4⅝	10	9⅞	3	8⅝	11	10½	4	0⅝	12	11⅛	4	4⅝	13	11⅝
3	4¾	10	10⅜	3	8¾	11	10⅞	4	0¾	12	11½	4	4¾	14	0
3	4⅞	10	10¾	3	8⅞	11	11¼	4	0⅞	12	11⅞	4	4⅞	14	0⅜
3	5	10	11⅛	3	9	11	11⅝	4	1	13	0¼	4	5	14	0⅞
3	5⅛	10	11½	3	9⅛	12	0⅛	4	1⅛	13	0⅝	4	5⅛	14	1¼
3	5¼	10	11⅞	3	9¼	12	0½	4	1¼	13	1	4	5¼	14	1⅝
3	5⅜	11	0⅜	3	9⅜	12	0⅞	4	1⅜	13	1½	4	5⅜	14	2
3	5½	11	0¾	3	9½	12	1¼	4	1½	13	1⅞	4	5½	14	2⅜
3	5⅝	11	1⅛	3	9⅝	12	1⅝	4	1⅝	13	2¼	4	5⅝	14	2¾
3	5¾	11	1½	3	9¾	12	2	4	1¾	13	2⅝	4	5¾	14	3⅛
3	5⅞	11	1⅞	3	9⅞	12	2⅜	4	1⅞	13	3	4	5⅞	14	3½

For Angle Iron measuring $\frac{3}{8}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
4	6	14	4	4	10	15	$4\frac{1}{2}$	5	2	16	$5\frac{1}{8}$	5	6	17	$5\frac{5}{8}$
4	$6\frac{1}{8}$	14	$4\frac{3}{8}$	4	$10\frac{1}{8}$	15	$4\frac{7}{8}$	5	$2\frac{1}{8}$	16	$5\frac{1}{2}$	5	$6\frac{1}{8}$	17	6
4	$6\frac{1}{4}$	14	$4\frac{3}{4}$	4	$10\frac{1}{4}$	15	$5\frac{3}{8}$	5	$2\frac{1}{4}$	16	$5\frac{7}{8}$	5	$6\frac{1}{4}$	17	$6\frac{1}{8}$
4	$6\frac{3}{8}$	14	$5\frac{1}{8}$	4	$10\frac{3}{8}$	15	$5\frac{3}{4}$	5	$2\frac{3}{8}$	16	$6\frac{1}{4}$	5	$6\frac{3}{8}$	17	$6\frac{7}{8}$
4	$6\frac{1}{2}$	14	$5\frac{1}{2}$	4	$10\frac{1}{2}$	15	$6\frac{1}{8}$	5	$2\frac{1}{2}$	16	$6\frac{5}{8}$	5	$6\frac{1}{2}$	17	$7\frac{1}{4}$
4	$6\frac{5}{8}$	14	$5\frac{7}{8}$	4	$10\frac{5}{8}$	15	$6\frac{1}{2}$	5	$2\frac{5}{8}$	16	7	5	$6\frac{5}{8}$	17	$7\frac{5}{8}$
4	$6\frac{3}{4}$	14	$6\frac{3}{8}$	4	$10\frac{3}{4}$	15	$6\frac{7}{8}$	5	$2\frac{3}{4}$	16	$7\frac{1}{2}$	5	$6\frac{3}{4}$	17	8
4	$6\frac{7}{8}$	14	$6\frac{3}{4}$	4	$10\frac{7}{8}$	15	$7\frac{1}{4}$	5	$2\frac{7}{8}$	16	$7\frac{7}{8}$	5	$6\frac{7}{8}$	17	$8\frac{3}{8}$
4	7	14	$7\frac{1}{8}$	4	11	15	$7\frac{3}{4}$	5	3	16	$8\frac{1}{4}$	5	7	17	$8\frac{7}{8}$
4	$7\frac{1}{8}$	14	$7\frac{1}{2}$	4	$11\frac{1}{8}$	15	$8\frac{1}{8}$	5	$3\frac{1}{8}$	16	$8\frac{5}{8}$	5	$7\frac{1}{8}$	17	$9\frac{1}{4}$
4	$7\frac{1}{4}$	14	$7\frac{7}{8}$	4	$11\frac{1}{4}$	15	$8\frac{1}{2}$	5	$3\frac{1}{4}$	16	9	5	$7\frac{1}{4}$	17	$9\frac{5}{8}$
4	$7\frac{3}{8}$	14	$8\frac{1}{4}$	4	$11\frac{3}{8}$	15	$8\frac{7}{8}$	5	$3\frac{3}{8}$	16	$9\frac{3}{8}$	5	$7\frac{3}{8}$	17	10
4	$7\frac{1}{2}$	14	$8\frac{3}{4}$	4	$11\frac{1}{2}$	15	$9\frac{1}{4}$	5	$3\frac{1}{2}$	16	$9\frac{7}{8}$	5	$7\frac{1}{2}$	17	$10\frac{3}{8}$
4	$7\frac{5}{8}$	14	$9\frac{1}{8}$	4	$11\frac{5}{8}$	15	$9\frac{5}{8}$	5	$3\frac{5}{8}$	16	$10\frac{1}{4}$	5	$7\frac{5}{8}$	17	$10\frac{3}{4}$
4	$7\frac{3}{4}$	14	$9\frac{1}{2}$	4	$11\frac{3}{4}$	15	10	5	$3\frac{3}{4}$	16	$10\frac{5}{8}$	5	$7\frac{3}{4}$	17	$11\frac{1}{8}$
4	$7\frac{7}{8}$	14	$9\frac{7}{8}$	4	$11\frac{7}{8}$	15	$10\frac{3}{8}$	5	$3\frac{7}{8}$	16	11	5	$7\frac{7}{8}$	17	$11\frac{1}{2}$
4	8	14	$10\frac{1}{4}$	5	0	15	$10\frac{7}{8}$	5	4	16	$11\frac{3}{8}$	5	8	18	0
4	$8\frac{1}{8}$	14	$10\frac{5}{8}$	5	$0\frac{1}{8}$	15	$11\frac{1}{4}$	5	$4\frac{1}{8}$	16	$11\frac{3}{4}$	5	$8\frac{1}{8}$	18	$0\frac{3}{8}$
4	$8\frac{1}{4}$	14	11	5	$0\frac{1}{4}$	15	$11\frac{5}{8}$	5	$4\frac{1}{4}$	17	$0\frac{1}{8}$	5	$8\frac{1}{4}$	18	$0\frac{3}{4}$
4	$8\frac{3}{8}$	14	$11\frac{1}{8}$	5	$0\frac{3}{8}$	16	0	5	$4\frac{3}{8}$	17	$0\frac{5}{8}$	5	$8\frac{3}{8}$	18	$1\frac{1}{8}$
4	$8\frac{1}{2}$	14	$11\frac{7}{8}$	5	$0\frac{1}{2}$	16	$0\frac{3}{8}$	5	$4\frac{1}{2}$	17	1	5	$8\frac{1}{2}$	18	$1\frac{1}{2}$
4	$8\frac{5}{8}$	15	$0\frac{1}{4}$	5	$0\frac{5}{8}$	16	$0\frac{3}{4}$	5	$4\frac{5}{8}$	17	$1\frac{3}{8}$	5	$8\frac{5}{8}$	18	$1\frac{7}{8}$
4	$8\frac{3}{4}$	15	$0\frac{5}{8}$	5	$0\frac{3}{4}$	16	$1\frac{1}{8}$	5	$4\frac{3}{4}$	17	$1\frac{3}{4}$	5	$8\frac{3}{4}$	18	$2\frac{3}{8}$
4	$8\frac{7}{8}$	15	1	5	$0\frac{7}{8}$	16	$1\frac{5}{8}$	5	$4\frac{7}{8}$	17	$2\frac{1}{8}$	5	$8\frac{7}{8}$	18	$2\frac{3}{4}$
4	9	15	$1\frac{3}{8}$	5	1	16	2	5	5	17	$2\frac{1}{2}$	5	9	18	$3\frac{1}{8}$
4	$9\frac{1}{8}$	15	$1\frac{7}{8}$	5	$1\frac{1}{8}$	16	$2\frac{3}{8}$	5	$5\frac{1}{8}$	17	$2\frac{7}{8}$	5	$9\frac{1}{8}$	18	$3\frac{1}{4}$
4	$9\frac{1}{4}$	15	$2\frac{1}{4}$	5	$1\frac{1}{4}$	16	$2\frac{3}{4}$	5	$5\frac{1}{4}$	17	$3\frac{3}{8}$	5	$9\frac{1}{4}$	18	$3\frac{7}{8}$
4	$9\frac{3}{8}$	15	$2\frac{5}{8}$	5	$1\frac{3}{8}$	16	$3\frac{1}{8}$	5	$5\frac{3}{8}$	17	$3\frac{3}{4}$	5	$9\frac{3}{8}$	18	$4\frac{1}{4}$
4	$9\frac{1}{2}$	15	3	5	$1\frac{1}{2}$	16	$3\frac{1}{2}$	5	$5\frac{1}{2}$	17	$4\frac{1}{8}$	5	$9\frac{1}{2}$	18	$4\frac{5}{8}$
4	$9\frac{5}{8}$	15	$3\frac{3}{8}$	5	$1\frac{5}{8}$	16	$3\frac{7}{8}$	5	$5\frac{5}{8}$	17	$4\frac{1}{2}$	5	$9\frac{5}{8}$	18	5
4	$9\frac{3}{4}$	15	$3\frac{3}{4}$	5	$1\frac{3}{4}$	16	$4\frac{3}{8}$	5	$5\frac{3}{4}$	17	$4\frac{7}{8}$	5	$9\frac{3}{4}$	18	$5\frac{1}{2}$
4	$9\frac{7}{8}$	15	$4\frac{1}{8}$	5	$1\frac{7}{8}$	16	$4\frac{3}{4}$	5	$5\frac{7}{8}$	17	$5\frac{1}{4}$	5	$9\frac{7}{8}$	18	$5\frac{7}{8}$

For ANGLE IRON measuring $\frac{3}{8}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
5	10	18	$6\frac{1}{4}$	6	2	19	$6\frac{7}{8}$	6	6	20	$7\frac{3}{8}$	6	10	21	8
5	$10\frac{1}{8}$	18	$6\frac{5}{8}$	6	$2\frac{1}{8}$	19	$7\frac{1}{4}$	6	$6\frac{1}{8}$	20	$7\frac{3}{4}$	6	$10\frac{1}{8}$	21	$8\frac{3}{8}$
5	$10\frac{1}{4}$	18	7	6	$2\frac{1}{4}$	19	$7\frac{5}{8}$	6	$6\frac{1}{4}$	20	$8\frac{1}{8}$	6	$10\frac{1}{4}$	21	$8\frac{3}{4}$
5	$10\frac{3}{8}$	18	$7\frac{3}{8}$	6	$2\frac{3}{8}$	19	8	6	$6\frac{3}{8}$	20	$8\frac{1}{2}$	6	$10\frac{3}{8}$	21	$9\frac{1}{8}$
5	$10\frac{1}{2}$	18	$7\frac{7}{8}$	6	$2\frac{1}{2}$	19	$8\frac{3}{8}$	6	$6\frac{1}{2}$	20	9	6	$10\frac{1}{2}$	21	$9\frac{1}{2}$
5	$10\frac{5}{8}$	18	$8\frac{1}{4}$	6	$2\frac{5}{8}$	19	$8\frac{3}{4}$	6	$6\frac{5}{8}$	20	$9\frac{3}{8}$	6	$10\frac{5}{8}$	21	$9\frac{7}{8}$
5	$10\frac{3}{4}$	18	$8\frac{5}{8}$	6	$2\frac{3}{4}$	19	$9\frac{1}{8}$	6	$6\frac{3}{4}$	20	$9\frac{3}{4}$	6	$10\frac{3}{4}$	21	$10\frac{3}{8}$
5	$10\frac{7}{8}$	18	9	6	$2\frac{7}{8}$	19	$9\frac{5}{8}$	6	$6\frac{7}{8}$	20	$10\frac{1}{8}$	6	$10\frac{7}{8}$	21	$10\frac{3}{4}$
5	11	18	$9\frac{3}{8}$	6	3	19	10	6	7	20	$10\frac{1}{2}$	6	11	21	$11\frac{1}{8}$
5	$11\frac{1}{8}$	18	$9\frac{3}{4}$	6	$3\frac{1}{8}$	19	$10\frac{3}{8}$	6	$7\frac{1}{8}$	20	$10\frac{7}{8}$	6	$11\frac{1}{8}$	21	$11\frac{1}{8}$
5	$11\frac{1}{4}$	18	$10\frac{1}{8}$	6	$3\frac{1}{4}$	19	$10\frac{3}{4}$	6	$7\frac{1}{4}$	20	$11\frac{3}{8}$	6	$11\frac{1}{4}$	21	$11\frac{7}{8}$
5	$11\frac{3}{8}$	18	$10\frac{1}{2}$	6	$3\frac{3}{8}$	19	$11\frac{1}{8}$	6	$7\frac{3}{8}$	20	$11\frac{3}{4}$	6	$11\frac{3}{8}$	22	$0\frac{1}{4}$
5	$11\frac{1}{2}$	18	11	6	$3\frac{1}{2}$	19	$11\frac{1}{2}$	6	$7\frac{1}{2}$	21	$0\frac{1}{8}$	6	$11\frac{1}{2}$	22	$0\frac{5}{8}$
5	$11\frac{5}{8}$	18	$11\frac{3}{8}$	6	$3\frac{5}{8}$	19	$11\frac{7}{8}$	6	$7\frac{5}{8}$	21	$0\frac{1}{2}$	6	$11\frac{5}{8}$	22	1
5	$11\frac{3}{4}$	18	$11\frac{3}{4}$	6	$3\frac{3}{4}$	20	$0\frac{3}{8}$	6	$7\frac{3}{4}$	21	$0\frac{7}{8}$	6	$11\frac{3}{4}$	22	$1\frac{1}{8}$
5	$11\frac{7}{8}$	19	$0\frac{1}{8}$	6	$3\frac{7}{8}$	20	$0\frac{3}{4}$	6	$7\frac{7}{8}$	21	$1\frac{1}{4}$	6	$11\frac{7}{8}$	22	$1\frac{7}{8}$
6	0	19	$0\frac{1}{2}$	6	4	20	$1\frac{1}{8}$	6	8	21	$1\frac{5}{8}$	7	0	22	$2\frac{1}{4}$
6	$0\frac{1}{8}$	19	$0\frac{7}{8}$	6	$4\frac{1}{8}$	20	$1\frac{1}{2}$	6	$8\frac{1}{8}$	21	2	7	$0\frac{1}{8}$	22	$2\frac{5}{8}$
6	$0\frac{1}{4}$	19	$1\frac{3}{8}$	6	$4\frac{1}{4}$	20	$1\frac{7}{8}$	6	$8\frac{1}{4}$	21	$2\frac{1}{2}$	7	$0\frac{1}{4}$	22	3
6	$0\frac{3}{8}$	19	$1\frac{3}{4}$	6	$4\frac{3}{8}$	20	$2\frac{1}{4}$	6	$8\frac{3}{8}$	21	$2\frac{7}{8}$	7	$0\frac{3}{8}$	22	$3\frac{3}{8}$
6	$0\frac{1}{2}$	19	$2\frac{1}{8}$	6	$4\frac{1}{2}$	20	$2\frac{5}{8}$	6	$8\frac{1}{2}$	21	$3\frac{1}{4}$	7	$0\frac{1}{2}$	22	$3\frac{7}{8}$
6	$0\frac{5}{8}$	19	$2\frac{1}{2}$	6	$4\frac{5}{8}$	20	3	6	$8\frac{5}{8}$	21	$3\frac{5}{8}$	7	$0\frac{5}{8}$	22	$4\frac{1}{4}$
6	$0\frac{3}{4}$	19	$2\frac{7}{8}$	6	$4\frac{3}{4}$	20	$3\frac{1}{2}$	6	$8\frac{3}{4}$	21	4	7	$0\frac{3}{4}$	22	$4\frac{5}{8}$
6	$0\frac{7}{8}$	19	$3\frac{1}{4}$	6	$4\frac{7}{8}$	20	$3\frac{7}{8}$	6	$8\frac{7}{8}$	21	$4\frac{3}{8}$	7	$0\frac{7}{8}$	22	5
6	1	19	$3\frac{5}{8}$	6	5	20	$4\frac{1}{4}$	6	9	21	$4\frac{3}{4}$	7	1	22	$5\frac{3}{8}$
6	$1\frac{1}{8}$	19	4	6	$5\frac{1}{8}$	20	$4\frac{5}{8}$	6	$9\frac{1}{8}$	21	$5\frac{1}{8}$	7	$1\frac{1}{8}$	22	$5\frac{3}{4}$
6	$1\frac{1}{4}$	19	$4\frac{1}{2}$	6	$5\frac{1}{4}$	20	5	6	$9\frac{1}{4}$	21	$5\frac{1}{2}$	7	$1\frac{1}{4}$	22	$6\frac{1}{8}$
6	$1\frac{3}{8}$	19	$4\frac{7}{8}$	6	$5\frac{3}{8}$	20	$5\frac{3}{8}$	6	$9\frac{3}{8}$	21	6	7	$1\frac{3}{8}$	22	$6\frac{1}{2}$
6	$1\frac{1}{2}$	19	$5\frac{1}{4}$	6	$5\frac{1}{2}$	20	$5\frac{7}{8}$	6	$9\frac{1}{2}$	21	$6\frac{3}{8}$	7	$1\frac{1}{2}$	22	7
6	$1\frac{5}{8}$	19	$5\frac{5}{8}$	6	$5\frac{5}{8}$	20	$6\frac{1}{4}$	6	$9\frac{5}{8}$	21	$6\frac{3}{4}$	7	$1\frac{5}{8}$	22	$7\frac{3}{8}$
6	$1\frac{3}{4}$	19	6	6	$5\frac{3}{4}$	20	$6\frac{5}{8}$	6	$9\frac{3}{4}$	21	$7\frac{1}{8}$	7	$1\frac{3}{4}$	22	$7\frac{3}{4}$
6	$1\frac{7}{8}$	19	$6\frac{3}{8}$	6	$5\frac{7}{8}$	20	7	6	$9\frac{7}{8}$	21	$7\frac{5}{8}$	7	$1\frac{7}{8}$	22	$8\frac{1}{8}$

For Angle Iron measuring $\frac{3}{8}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
7	2	22	$8\frac{1}{2}$	7	6	23	$9\frac{1}{8}$	7	10	24	$9\frac{5}{8}$	8	2	25	$10\frac{1}{4}$
7	$2\frac{1}{8}$	22	$8\frac{7}{8}$	7	$6\frac{1}{8}$	23	$9\frac{1}{2}$	7	$10\frac{1}{8}$	24	10	8	$2\frac{1}{8}$	25	$10\frac{5}{8}$
7	$2\frac{1}{4}$	22	$9\frac{1}{4}$	7	$6\frac{1}{4}$	23	$9\frac{7}{8}$	7	$10\frac{1}{4}$	24	$10\frac{1}{2}$	8	$2\frac{1}{4}$	25	11
7	$2\frac{3}{8}$	22	$9\frac{3}{4}$	7	$6\frac{3}{8}$	23	$10\frac{1}{4}$	7	$10\frac{3}{8}$	24	$10\frac{7}{8}$	8	$2\frac{3}{8}$	25	$11\frac{3}{8}$
7	$2\frac{1}{2}$	22	$10\frac{1}{8}$	7	$6\frac{1}{2}$	23	$10\frac{5}{8}$	7	$10\frac{1}{2}$	24	$11\frac{1}{4}$	8	$2\frac{1}{2}$	25	$11\frac{3}{4}$
7	$2\frac{5}{8}$	22	$10\frac{1}{2}$	7	$6\frac{5}{8}$	23	11	7	$10\frac{5}{8}$	24	$11\frac{5}{8}$	8	$2\frac{5}{8}$	26	$0\frac{1}{8}$
7	$2\frac{3}{4}$	22	$10\frac{7}{8}$	7	$6\frac{3}{4}$	23	$11\frac{1}{2}$	7	$10\frac{3}{4}$	25	0	8	$2\frac{3}{4}$	26	$0\frac{5}{8}$
7	$2\frac{7}{8}$	22	$11\frac{1}{4}$	7	$6\frac{7}{8}$	23	$11\frac{7}{8}$	7	$10\frac{7}{8}$	25	$0\frac{3}{8}$	8	$2\frac{7}{8}$	26	1
7	3	22	$11\frac{5}{8}$	7	7	24	$0\frac{1}{4}$	7	11	25	$0\frac{3}{4}$	8	3	26	$1\frac{3}{8}$
7	$3\frac{1}{8}$	23	0	7	$7\frac{1}{8}$	24	$0\frac{5}{8}$	7	$11\frac{1}{8}$	25	$1\frac{1}{4}$	8	$3\frac{1}{8}$	26	$1\frac{3}{4}$
7	$3\frac{1}{4}$	23	$0\frac{1}{2}$	7	$7\frac{1}{4}$	24	1	7	$11\frac{1}{4}$	25	$1\frac{5}{8}$	8	$3\frac{1}{4}$	26	$2\frac{1}{8}$
7	$3\frac{3}{8}$	23	$0\frac{7}{8}$	7	$7\frac{3}{8}$	24	$1\frac{3}{8}$	7	$11\frac{3}{8}$	25	2	8	$3\frac{3}{8}$	26	$2\frac{1}{8}$
7	$3\frac{1}{2}$	23	$1\frac{1}{4}$	7	$7\frac{1}{2}$	24	$1\frac{3}{4}$	7	$11\frac{1}{2}$	25	$2\frac{3}{8}$	8	$3\frac{1}{2}$	26	$2\frac{7}{8}$
7	$3\frac{5}{8}$	23	$1\frac{5}{8}$	7	$7\frac{5}{8}$	24	$2\frac{1}{4}$	7	$11\frac{5}{8}$	25	$2\frac{1}{8}$	8	$3\frac{5}{8}$	26	$3\frac{3}{8}$
7	$3\frac{3}{4}$	23	2	7	$7\frac{3}{4}$	24	$2\frac{3}{8}$	7	$11\frac{3}{4}$	25	$3\frac{1}{8}$	8	$3\frac{3}{4}$	26	$3\frac{7}{8}$
7	$3\frac{7}{8}$	23	$2\frac{3}{8}$	7	$7\frac{7}{8}$	24	3	7	$11\frac{7}{8}$	25	$3\frac{1}{2}$	8	$3\frac{7}{8}$	26	$4\frac{1}{8}$
7	4	23	$2\frac{3}{4}$	7	8	24	$3\frac{3}{8}$	8	0	25	$3\frac{7}{8}$	8	4	26	$4\frac{1}{8}$
7	$4\frac{1}{8}$	23	$3\frac{1}{4}$	7	$8\frac{1}{8}$	24	$3\frac{3}{4}$	8	$0\frac{1}{8}$	25	$4\frac{3}{8}$	8	$4\frac{1}{8}$	26	$4\frac{7}{8}$
7	$4\frac{1}{4}$	23	$3\frac{3}{8}$	7	$8\frac{1}{4}$	24	$4\frac{1}{8}$	8	$0\frac{1}{4}$	25	$4\frac{3}{8}$	8	$4\frac{1}{4}$	26	$5\frac{1}{4}$
7	$4\frac{3}{8}$	23	4	7	$8\frac{3}{8}$	24	$4\frac{1}{2}$	8	$0\frac{3}{8}$	25	$5\frac{1}{8}$	8	$4\frac{3}{8}$	26	$5\frac{5}{8}$
7	$4\frac{1}{2}$	23	$4\frac{3}{8}$	7	$8\frac{1}{2}$	24	$4\frac{7}{8}$	8	$0\frac{1}{2}$	25	$5\frac{1}{2}$	8	$4\frac{1}{2}$	26	6
7	$4\frac{5}{8}$	23	$4\frac{3}{4}$	7	$8\frac{5}{8}$	24	$5\frac{3}{8}$	8	$0\frac{5}{8}$	25	$5\frac{7}{8}$	8	$4\frac{5}{8}$	26	$6\frac{1}{8}$
7	$4\frac{3}{4}$	23	$5\frac{1}{8}$	7	$8\frac{3}{4}$	24	$5\frac{3}{4}$	8	$0\frac{3}{4}$	25	$6\frac{1}{4}$	8	$4\frac{3}{4}$	26	$6\frac{7}{8}$
7	$4\frac{7}{8}$	23	$5\frac{1}{2}$	7	$8\frac{7}{8}$	24	$6\frac{1}{8}$	8	$0\frac{7}{8}$	25	$6\frac{5}{8}$	8	$4\frac{7}{8}$	26	$7\frac{1}{4}$
7	5	23	6	7	9	24	$6\frac{1}{2}$	8	1	25	7	8	5	26	$7\frac{5}{8}$
7	$5\frac{1}{8}$	23	$6\frac{3}{8}$	7	$9\frac{1}{8}$	24	$6\frac{7}{8}$	8	$1\frac{1}{8}$	25	$7\frac{1}{2}$	8	$5\frac{1}{8}$	26	8
7	$5\frac{1}{4}$	23	$6\frac{3}{4}$	7	$9\frac{1}{4}$	24	$7\frac{1}{4}$	8	$1\frac{1}{4}$	25	$7\frac{7}{8}$	8	$5\frac{1}{4}$	26	$8\frac{3}{8}$
7	$5\frac{3}{8}$	23	$7\frac{1}{8}$	7	$9\frac{3}{8}$	24	$7\frac{5}{8}$	8	$1\frac{3}{8}$	25	$8\frac{1}{4}$	8	$5\frac{3}{8}$	26	$8\frac{7}{8}$
7	$5\frac{1}{2}$	23	$7\frac{1}{2}$	7	$9\frac{1}{2}$	24	8	8	$1\frac{1}{2}$	25	$8\frac{5}{8}$	8	$5\frac{1}{2}$	26	$9\frac{1}{2}$
7	$5\frac{5}{8}$	23	$7\frac{7}{8}$	7	$9\frac{5}{8}$	24	$8\frac{1}{2}$	8	$1\frac{5}{8}$	25	9	8	$5\frac{5}{8}$	26	$9\frac{5}{8}$
7	$5\frac{3}{4}$	23	$8\frac{1}{4}$	7	$9\frac{3}{4}$	24	$8\frac{7}{8}$	8	$1\frac{3}{4}$	25	$9\frac{1}{2}$	8	$5\frac{3}{4}$	26	10
7	$5\frac{7}{8}$	23	$8\frac{3}{4}$	7	$9\frac{7}{8}$	24	$9\frac{1}{4}$	8	$1\frac{7}{8}$	25	$9\frac{7}{8}$	8	$5\frac{7}{8}$	26	$10\frac{3}{8}$

TABLE III.,

For ANGLE IRON measuring ½ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.	LENGTH REQUIRED FOR RING.	INSIDE DIAMETER OF RING.	LENGTH REQUIRED FOR RING.	INSIDE DIAMETER OF RING.	LENGTH REQUIRED FOR RING.	INSIDE DIAMETER OF RING.	LENGTH REQUIRED FOR RING.
FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.
6	1 10	0 10	2 10½	1 2	3 11⅛	1 6	4 11⅝
6⅛	1 10⅜	0 10⅛	2 10⅞	1 2⅛	3 11½	1 6⅛	5 0
6¼	1 10¾	0 10¼	2 11⅜	1 2¼	3 11⅞	1 6¼	5 0⅜
6⅜	1 11⅛	0 10⅜	2 11¾	1 2⅜	4 0¼	1 6⅜	5 0⅞
6½	1 11½	0 10½	3 0⅛	1 2½	4 0⅝	1 6½	5 1¼
6⅝	1 11⅞	0 10⅝	3 0½	1 2⅝	4 1	1 6⅝	5 1⅝
6¾	2 0⅜	0 10¾	3 0⅞	1 2¾	4 1⅜	1 6¾	5 2
6⅞	2 0¾	0 10⅞	3 1¼	1 2⅞	4 1⅞	1 6⅞	5 2⅜
7	2 1⅛	0 11	3 1⅝	1 3	4 2¼	1 7	5 2¾
7⅛	2 1½	0 11⅛	3 2	1 3⅛	4 2⅝	1 7⅛	5 3⅛
7¼	2 1⅞	0 11¼	3 2⅛	1 3¼	4 3	1 7¼	5 3⅝
7⅜	2 2⅜	0 11⅜	3 2⅞	1 3⅜	4 3⅜	1 7⅜	5 4
7½	2 2¾	0 11½	3 3¼	1 3½	4 3¾	1 7½	5 4⅜
7⅝	2 3⅛	0 11⅝	3 3⅜	1 3⅝	4 4⅛	1 7⅝	5 4¾
7¾	2 3½	0 11¾	3 4	1 3¾	4 4½	1 7¾	5 5⅛
7⅞	2 3⅞	0 11⅞	3 4⅜	1 3⅞	4 5	1 7⅞	5 5½
8	2 4¼	1 0	3 4⅞	1 4	4 5⅜	1 8	5 5⅞
8⅛	2 4⅝	1 0⅛	3 5¼	1 4⅛	4 5¾	1 8⅛	5 6⅜
8¼	2 5	1 0¼	3 5⅝	1 4¼	4 6⅛	1 8¼	5 6¾
8⅜	2 5½	1 0⅜	3 6	1 4⅜	4 6½	1 8⅜	5 7⅛
8½	2 5⅞	1 0½	3 6⅜	1 4½	4 7	1 8½	5 7½
8⅝	2 6¼	1 0⅝	3 6¾	1 4⅝	4 7⅜	1 8⅝	5 8
8¾	2 6⅝	1 0¾	3 7⅛	1 4¾	4 7¾	1 8¾	5 8⅜
8⅞	2 7	1 0⅞	3 7⅝	1 4⅞	4 8⅛	1 8⅞	5 8¾
9	2 7⅜	1 1	3 8	1 5	4 8½	1 9	5 9⅛
9⅛	2 7¾	1 1⅛	3 8⅜	1 5⅛	4 8⅞	1 9⅛	5 9½
9¼	2 8¼	1 1¼	3 8¾	1 5¼	4 9¼	1 9¼	5 9⅞
9⅜	2 8⅝	1 1⅜	3 9⅛	1 5⅜	4 9⅝	1 9⅜	5 10¼
9½	2 9	1 1½	3 9½	1 5½	4 10⅛	1 9½	5 10⅝
9⅝	2 9⅜	1 1⅝	3 9⅞	1 5⅝	4 10½	1 9⅝	5 11
9¾	2 9¾	1 1¾	3 10⅜	1 5¾	4 10⅞	1 9¾	5 11⅛
9⅞	2 10⅛	1 1⅞	3 10¾	1 5⅞	4 11¼	1 9⅞	5 11⅞

For Angle Iron measuring ½ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
1	10	6	0¼	2	2	7	0¾	2	6	8	1⅜	2	10	9	1⅞
1	10⅛	6	0⅝	2	2⅛	7	1⅛	2	6⅛	8	1¾	2	10⅛	9	2⅜
1	10¼	6	1	2	2¼	7	1½	2	6¼	8	2⅛	2	10¼	9	2¾
1	10⅜	6	1⅜	2	2⅜	7	2	2	6⅜	8	2½	2	10⅜	9	3⅛
1	10½	6	1¾	2	2½	7	2⅜	2	6½	8	2⅞	2	10½	9	3½
1	10⅝	6	2¼	2	2⅝	7	2¾	2	6⅝	8	3⅜	2	10⅝	9	3⅞
1	10¾	6	2⅝	2	2¾	7	3⅛	2	6¾	8	3¾	2	10¾	9	4¼
1	10⅞	6	3	2	2⅞	7	3½	2	6⅞	8	4⅛	2	10⅞	9	4⅝
1	11	6	3⅜	2	3	7	3⅞	2	7	8	4½	2	11	9	5
1	11⅛	6	3¾	2	3⅛	7	4⅜	2	7⅛	8	4⅞	2	11⅛	9	5½
1	11¼	6	4⅛	2	3¼	7	4¾	2	7¼	8	5¼	2	11¼	9	5⅞
1	11⅜	6	4½	2	3⅜	7	5⅛	2	7⅜	8	5⅝	2	11⅜	9	6¼
1	11½	6	4⅞	2	3½	7	5½	2	7½	8	6	2	11½	9	6⅝
1	11⅝	6	5⅜	2	3⅝	7	5⅞	2	7⅝	8	6½	2	11⅝	9	7
1	11¾	6	5¾	2	3¾	7	6¼	2	7¾	8	6⅞	2	11¾	9	7⅜
1	11⅞	6	6⅛	2	3⅞	7	6⅝	2	7⅞	8	7¼	2	11⅞	9	7⅞
2	0	6	6½	2	4	7	7	2	8	8	7⅝	3	0	9	8¼
2	0⅛	6	6⅞	2	4⅛	7	7½	2	8⅛	8	8	3	0⅛	9	8⅝
2	0¼	6	7¼	2	4¼	7	7⅞	2	8¼	8	8⅜	3	0¼	9	9
2	0⅜	6	7⅝	2	4⅜	7	8¼	2	8⅜	8	8⅞	3	0⅜	9	9⅜
2	0½	6	8⅛	2	4½	7	8⅝	2	8½	8	9¼	3	0½	9	9¾
2	0⅝	6	8½	2	4⅝	7	9	2	8⅝	8	9⅝	3	0⅝	9	10⅛
2	0¾	6	8⅞	2	4¾	7	9⅜	2	8¾	8	10	3	0¾	9	10½
2	0⅞	6	9¼	2	4⅞	7	9¾	2	8⅞	8	10⅜	3	0⅞	9	10⅞
2	1	6	9⅝	2	5	7	10¼	2	9	8	10¾	3	1	9	11⅜
2	1⅛	6	10	2	5⅛	7	10⅝	2	9⅛	8	11⅛	3	1⅛	9	11¾
2	1¼	6	10½	2	5¼	7	11	2	9¼	8	11½	3	1¼	10	0⅛
2	1⅜	6	10⅞	2	5⅜	7	11⅜	2	9⅜	9	0	3	1⅜	10	0½
2	1½	6	11¼	2	5½	7	11¾	2	9½	9	0⅜	3	1½	10	0⅞
2	1⅝	6	11⅝	2	5⅝	8	0⅛	2	9⅝	9	0¾	3	1⅝	10	1⅜
2	1¾	7	0	2	5¾	8	0½	2	9¾	9	1⅛	3	1¾	10	1¾
2	1⅞	7	0⅜	2	5⅞	8	1	2	9⅞	9	1½	3	1⅞	10	2⅛

For Angle Iron measuring ¼ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
3	2	10	2 1/2	3	6	11	3	3	10	12	3 5/8	4	2	13	4 1/4
3	2 1/8	10	2 7/8	3	6 1/8	11	3 1/2	3	10 1/8	12	4	4	2 1/8	13	4 5/8
3	2 1/4	10	3 1/4	3	6 1/4	11	3 7/8	3	10 1/4	12	4 3/8	4	2 1/4	13	5
3	2 3/8	10	3 5/8	3	6 3/8	11	4 1/4	3	10 3/8	12	4 3/4	4	2 3/8	13	5 3/8
3	2 1/2	10	4	3	6 1/2	11	4 5/8	3	10 1/2	12	5 1/4	4	2 1/2	13	5 3/4
3	2 5/8	10	4 1/2	3	6 5/8	11	5	3	10 5/8	12	5 5/8	4	2 5/8	13	6 1/8
3	2 3/4	10	4 7/8	3	6 3/4	11	5 3/8	3	10 3/4	12	6	4	2 3/4	13	6 1/2
3	2 7/8	10	5 1/4	3	6 7/8	11	5 3/4	3	10 7/8	12	6 3/8	4	2 7/8	13	7
3	3	10	5 5/8	3	7	11	6 1/4	3	11	12	6 3/4	4	3	13	7 3/8
3	3 1/8	10	6	3	7 1/8	11	6 5/8	3	11 1/8	12	7 1/8	4	3 1/8	13	7 3/4
3	3 1/4	10	6 3/8	3	7 1/4	11	7	3	11 1/4	12	7 1/2	4	3 1/4	13	8 1/8
3	3 3/8	10	6 7/8	3	7 3/8	11	7 3/8	3	11 3/8	12	7 7/8	4	3 3/8	13	8 1/2
3	3 1/2	10	7 1/4	3	7 1/2	11	7 3/4	3	11 1/2	12	8 3/8	4	3 1/2	13	8 7/8
3	3 5/8	10	7 5/8	3	7 5/8	11	8 1/8	3	11 5/8	12	8 3/4	4	3 5/8	13	9 1/4
3	3 3/4	10	8	3	7 3/4	11	8 1/2	3	11 3/4	12	9 1/8	4	3 3/4	13	9 5/8
3	3 7/8	10	8 3/8	3	7 7/8	11	8 7/8	3	11 7/8	12	9 1/2	4	3 7/8	13	10 1/8
3	4	10	8 3/4	3	8	11	9 3/8	4	0	12	9 7/8	4	4	13	10 1/2
3	4 1/8	10	9 1/8	3	8 1/8	11	9 3/4	4	0 1/8	12	10 3/8	4	4 1/8	13	10 7/8
3	4 1/4	10	9 1/2	3	8 1/4	11	10 1/8	4	0 1/4	12	10 3/4	4	4 1/4	13	11 1/4
3	4 3/8	10	9 7/8	3	8 3/8	11	10 1/2	4	0 3/8	12	11 1/8	4	4 3/8	13	11 5/8
3	4 1/2	10	10 3/8	3	8 1/2	11	10 7/8	4	0 1/2	12	11 1/2	4	4 1/2	14	0
3	4 5/8	10	10 3/4	3	8 5/8	11	11 1/4	4	0 5/8	12	11 7/8	4	4 5/8	14	0 3/8
3	4 3/4	10	11 1/8	3	8 3/4	11	11 5/8	4	0 3/4	13	0 1/4	4	4 3/4	14	0 7/8
3	4 7/8	10	11 1/2	3	8 7/8	12	0 1/8	4	0 7/8	13	0 5/8	4	4 7/8	14	1 1/4
3	5	10	11 7/8	3	9	12	0 1/2	4	1	13	1	4	5	14	1 5/8
3	5 1/8	11	0 3/8	3	9 1/8	12	0 7/8	4	1 1/8	13	1 1/2	4	5 1/8	14	2
3	5 1/4	11	0 3/4	3	9 1/4	12	1 1/4	4	1 1/4	13	1 7/8	4	5 1/4	14	2 3/8
3	5 3/8	11	1 1/8	3	9 3/8	12	1 5/8	4	1 3/8	13	2 1/4	4	5 3/8	14	2 3/4
3	5 1/2	11	1 1/2	3	9 1/2	12	2	4	1 1/2	13	2 5/8	4	5 1/2	14	3 1/8
3	5 5/8	11	1 7/8	3	9 5/8	12	2 3/8	4	1 5/8	13	3	4	5 5/8	14	3 1/2
3	5 3/4	11	2 1/4	3	9 3/4	12	2 7/8	4	1 3/4	13	3 3/8	4	5 3/4	14	4
3	5 7/8	11	2 5/8	3	9 7/8	12	3 1/4	4	1 7/8	13	3 3/4	4	5 7/8	14	4 3/8

For Angle Iron measuring ¼ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
4	6	14	4 3/4	4	10	15	5 3/8	5	2	16	5 7/8	5	6	17	6 1/2
4	6 1/8	14	5 1/8	4	10 1/8	15	5 3/4	5	2 1/8	16	6 1/4	5	6 1/8	17	6 7/8
4	6 1/4	14	5 1/2	4	10 1/4	15	6 1/8	5	2 1/4	16	6 5/8	5	6 1/4	17	7 1/4
4	6 3/8	14	5 7/8	4	10 3/8	15	6 1/2	5	2 3/8	16	7	5	6 3/8	17	7 5/8
4	6 1/2	14	6 3/8	4	10 1/2	15	6 7/8	5	2 1/2	16	7 1/2	5	6 1/2	17	8
4	6 5/8	14	6 3/4	4	10 5/8	15	7 1/4	5	2 5/8	16	7 7/8	5	6 5/8	17	8 3/8
4	6 3/4	14	7 1/8	4	10 3/4	15	7 3/4	5	2 3/4	16	8 1/4	5	6 3/4	17	8 7/8
4	6 7/8	14	7 1/2	4	10 7/8	15	8 1/8	5	2 7/8	16	8 5/8	5	6 7/8	17	9 1/4
4	7	14	7 5/8	4	11	15	8 1/2	5	3	16	9	5	7	17	9 5/8
4	7 1/8	14	8 1/4	4	11 1/8	15	8 7/8	5	3 1/8	16	9 3/8	5	7 1/8	17	10
4	7 1/4	14	8 3/4	4	11 1/4	15	9 1/4	5	3 1/4	16	9 7/8	5	7 1/4	17	10 3/8
4	7 3/8	14	9 1/8	4	11 3/8	15	9 5/8	5	3 3/8	16	10 1/4	5	7 3/8	17	10 3/4
4	7 1/2	14	9 1/2	4	11 1/2	15	10	5	3 1/2	16	10 5/8	5	7 1/2	17	11 1/8
4	7 5/8	14	9 7/8	4	11 5/8	15	10 3/8	5	3 5/8	16	11	5	7 5/8	17	11 1/2
4	7 3/4	14	10 1/4	4	11 3/4	15	10 7/8	5	3 3/4	16	11 3/8	5	7 3/4	18	0
4	7 7/8	14	10 5/8	4	11 7/8	15	11 1/4	5	3 7/8	16	11 3/4	5	7 7/8	18	0 3/8
4	8	14	11	5	0	15	11 5/8	5	4	17	0 1/8	5	8	18	0 3/4
4	8 1/8	14	11 1/2	5	0 1/8	16	0	5	4 1/8	17	0 5/8	5	8 1/8	18	1 1/8
4	8 1/4	14	11 7/8	5	0 1/4	16	0 3/8	5	4 1/4	17	1	5	8 1/4	18	1 1/2
4	8 3/8	15	0 1/4	5	0 3/8	16	0 3/4	5	4 3/8	17	1 3/8	5	8 3/8	18	1 7/8
4	8 1/2	15	0 5/8	5	0 1/2	16	1 1/8	5	4 1/2	17	1 3/4	5	8 1/2	18	2 3/8
4	8 5/8	15	1	5	0 5/8	16	1 5/8	5	4 5/8	17	2 1/8	5	8 5/8	18	2 3/4
4	8 3/4	15	1 3/8	5	0 3/4	16	2	5	4 3/4	17	2 1/2	5	8 3/4	18	3 1/8
4	8 7/8	15	1 7/8	5	0 7/8	16	2 3/8	5	4 7/8	17	2 7/8	5	8 7/8	18	3 1/2
4	9	15	2 1/4	5	1	16	2 3/4	5	5	17	3 3/8	5	9	18	3 7/8
4	9 1/8	15	2 5/8	5	1 1/8	16	3 1/8	5	5 1/8	17	3 3/4	5	9 1/8	18	4 1/4
4	9 1/4	15	3	5	1 1/4	16	3 1/2	5	5 1/4	17	4 1/8	5	9 1/4	18	4 5/8
4	9 3/8	15	3 3/8	5	1 3/8	16	3 7/8	5	5 3/8	17	4 1/2	5	9 3/8	18	5
4	9 1/2	15	3 3/4	5	1 1/2	16	4 3/8	5	5 1/2	17	4 7/8	5	9 1/2	18	5 1/2
4	9 5/8	15	4 1/8	5	1 5/8	16	4 3/4	5	5 5/8	17	5 1/4	5	9 5/8	18	5 7/8
4	9 3/4	15	4 1/2	5	1 3/4	16	5 1/8	5	5 3/4	17	5 5/8	5	9 3/4	18	6 1/4
4	9 7/8	15	4 7/8	5	1 7/8	16	5 1/2	5	5 7/8	17	6	5	9 7/8	18	6 5/8

For Angle Iron measuring ¼ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
5	10	18	7	6	2	19	7 5/8	6	6	20	8 1/8	6	10	21	8 3/4
5	10 1/8	18	7 3/8	6	2 1/8	19	8	6	6 1/8	20	8 1/2	6	10 1/8	21	9 1/8
5	10 1/4	18	7 7/8	6	2 1/4	19	8 3/8	6	6 1/4	20	9	6	10 1/4	21	9 1/2
5	10 3/8	18	8 1/4	6	2 3/8	19	8 3/4	6	6 3/8	20	9 3/8	6	10 3/8	21	9 7/8
5	10 1/2	18	8 5/8	6	2 1/2	19	9 1/8	6	6 1/2	20	9 3/4	6	10 1/2	21	10 3/8
5	10 5/8	18	9	6	2 5/8	19	9 5/8	6	6 5/8	20	10 1/8	6	10 5/8	21	10 3/4
5	10 3/4	18	9 3/8	6	2 3/4	19	10	6	6 3/4	20	10 1/2	6	10 3/4	21	11 1/8
5	10 7/8	18	9 3/4	6	2 7/8	19	10 3/8	6	6 7/8	20	10 7/8	6	10 7/8	21	11 1/2
5	11	18	10 1/8	6	3	19	10 3/4	6	7	20	11 3/8	6	11	21	11 7/8
5	11 1/8	18	10 1/2	6	3 1/8	19	11 1/8	6	7 1/8	20	11 3/4	6	11 1/8	22	0 1/4
5	11 1/4	18	11	6	3 1/4	19	11 1/2	6	7 1/4	21	0 1/8	6	11 1/4	22	0 5/8
5	11 3/8	18	11 3/8	6	3 3/8	19	11 7/8	6	7 3/8	21	0 1/2	6	11 3/8	22	1
5	11 1/2	18	11 3/4	6	3 1/2	20	0 3/8	6	7 1/2	21	0 7/8	6	11 1/2	22	1 1/2
5	11 5/8	19	0 1/8	6	3 5/8	20	0 3/4	6	7 5/8	21	1 1/4	6	11 5/8	22	1 7/8
5	11 3/4	19	0 1/2	6	3 3/4	20	1 1/8	6	7 3/4	21	1 5/8	6	11 3/4	22	2 1/4
5	11 7/8	19	0 7/8	6	3 7/8	20	1 1/2	6	7 7/8	21	2	6	11 7/8	22	2 5/8
6	0	19	1 3/8	6	4	20	1 7/8	6	8	21	2 1/2	7	0	22	3
6	0 1/8	19	1 3/4	6	4 1/8	20	2 1/4	6	8 1/8	21	2 7/8	7	0 1/8	22	3 3/8
6	0 1/4	19	2 1/8	6	4 1/4	20	2 5/8	6	8 1/4	21	3 1/4	7	0 1/4	22	3 7/8
6	0 3/8	19	2 1/2	6	4 3/8	20	3	6	8 3/8	21	3 5/8	7	0 3/8	22	4 1/4
6	0 1/2	19	2 7/8	6	4 1/2	20	3 1/2	6	8 1/2	21	4	7	0 1/2	22	4 5/8
6	0 5/8	19	3 1/4	6	4 5/8	20	3 7/8	6	8 5/8	21	4 3/8	7	0 5/8	22	5
6	0 3/4	19	3 5/8	6	4 3/4	20	4 1/4	6	8 3/8	21	4 3/4	7	0 3/4	22	5 3/8
6	0 7/8	19	4	6	4 7/8	20	4 5/8	6	8 7/8	21	5 1/8	7	0 7/8	22	5 3/4
6	1	19	4 1/2	6	5	20	5	6	9	21	5 1/2	7	1	22	6 1/8
6	1 1/8	19	4 7/8	6	5 1/8	20	5 3/8	6	9 1/8	21	6	7	1 1/8	22	6 1/2
6	1 1/4	19	5 1/4	6	5 1/4	20	5 7/8	6	9 1/4	21	6 3/8	7	1 1/4	22	7
6	1 3/8	19	5 5/8	6	5 3/8	20	6 1/4	6	9 3/8	21	6 3/4	7	1 3/8	22	7 3/8
6	1 1/2	19	6	6	5 1/2	20	6 5/8	6	9 1/2	21	7 1/8	7	1 1/2	22	7 3/4
6	1 5/8	19	6 3/8	6	5 5/8	20	7	6	9 5/8	21	7 1/8	7	1 5/8	22	8 1/8
6	1 3/4	19	6 7/8	6	5 3/4	20	7 3/8	6	9 3/4	21	8	7	1 3/4	22	8 1/2
6	1 7/8	19	7 1/4	6	5 7/8	20	7 3/4	6	9 7/8	21	8 3/8	7	1 7/8	22	8 7/8

For Angle Iron measuring ¼ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRE FOR RIN
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.
7	2	22	9¼	7	6	23	9⅞	7	10	24	10½	8	2	25
7	2⅛	22	9¾	7	6⅛	23	10¼	7	10⅛	24	10⅞	8	2⅛	25
7	2¼	22	10⅛	7	6¼	23	10⅝	7	10¼	24	11¼	8	2¼	25
7	2⅜	22	10½	7	6⅜	23	11	7	10⅜	24	11⅝	8	2⅜	26
7	2½	22	10⅞	7	6½	23	11½	7	10½	25	0	8	2½	26
7	2⅝	22	11¼	7	6⅝	23	11⅞	7	10⅝	25	0⅜	8	2⅝	26
7	2¾	22	11⅝	7	6¾	24	0¼	7	10¾	25	0¾	8	2¾	26
7	2⅞	23	0	7	6⅞	24	0⅝	7	10⅞	25	1¼	8	2⅞	26
7	3	23	0½	7	7	24	1	7	11	25	1⅝	8	3	26
7	3⅛	23	0⅞	7	7⅛	24	1⅜	7	11⅛	25	2	8	3⅛	26
7	3¼	23	1¼	7	7¼	24	1¾	7	11¼	25	2⅜	8	3¼	26
7	3⅜	23	1⅝	7	7⅜	24	2¼	7	11⅜	25	2¾	8	3⅜	26
7	3½	23	2	7	7½	24	2⅝	7	11½	25	3⅛	8	3½	26
7	3⅝	23	2⅜	7	7⅝	24	3	7	11⅝	25	3½	8	3⅝	26
7	3¾	23	2¾	7	7¾	24	3⅜	7	11¾	25	3⅞	8	3¾	26
7	3⅞	23	3¼	7	7⅞	24	3¾	7	11⅞	25	4⅜	8	3⅞	26
7	4	23	3⅝	7	8	24	4⅛	8	0	25	4¾	8	4	26
7	4⅛	23	4	7	8⅛	24	4½	8	0⅛	25	5⅛	8	4⅛	26
7	4¼	23	4⅜	7	8¼	24	4⅞	8	0¼	25	5½	8	4¼	26
7	4⅜	23	4¾	7	8⅜	24	5⅜	8	0⅜	25	5⅞	8	4⅜	26
7	4½	23	5⅛	7	8½	24	5¾	8	0½	25	6¼	8	4½	26
7	4⅝	23	5½	7	8⅝	24	6⅛	8	0⅝	25	6⅝	8	4⅝	26
7	4¾	23	6	7	8¾	24	6½	8	0¾	25	7	8	4¾	26
7	4⅞	23	6⅜	7	8⅞	24	6⅞	8	0⅞	25	7½	8	4⅞	26
7	5	23	6¾	7	9	24	7¼	8	1	25	7⅞	8	5	26
7	5⅛	23	7⅛	7	9⅛	24	7⅝	8	1⅛	25	8¼	8	5⅛	26
7	5¼	23	7½	7	9¼	24	8	8	1¼	25	8⅝	8	5¼	26
7	5⅜	23	7⅞	7	9⅜	24	8½	8	1⅜	25	9	8	5⅜	26
7	5½	23	8¼	7	9½	24	8⅞	8	1½	25	9½	8	5½	26
7	5⅝	23	8¾	7	9⅝	24	9¼	8	1⅝	25	9⅞	8	5⅝	26
7	5¾	23	9⅛	7	9¾	24	9⅝	8	1¾	25	10¼	8	5¾	26
7	5⅞	23	9½	7	9⅞	24	10	8	1⅞	25	10⅝	8	5⅞	26

TABLE IV.,

For Angle Iron measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.	LENGTH REQUIRED FOR RING.	INSIDE DIAMETER OF RING.	LENGTH REQUIRED FOR RING.	INSIDE DIAMETER OF RING.	LENGTH REQUIRED FOR RING.	INSIDE DIAMETER OF RING.	LENGTH REQUIRED FOR RING.
IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.
6	1 10¾	0 10	2 11⅜	1 2	3 11⅞	1 6	5 0⅜
6⅛	1 11⅛	0 10⅛	2 11¾	1 2⅛	4 0¼	1 6⅛	5 0⅞
6¼	1 11¼	0 10¼	3 0⅛	1 2¼	4 0⅝	1 6¼	5 1¼
6⅜	1 11⅞	0 10⅜	3 0½	1 2⅜	4 1	1 6⅜	5 1⅝
6½	2 0⅜	0 10½	3 0⅞	1 2½	4 1⅜	1 6½	5 2
6⅝	2 0¾	0 10⅝	3 1¼	1 2⅝	4 1⅞	1 6⅝	5 2⅜
6¾	2 1⅛	0 10¾	3 1⅝	1 2¾	4 2¼	1 6¾	5 2¾
6⅞	2 1½	0 10⅞	3 2	1 2⅞	4 2⅝	1 6⅞	5 3⅛
7	2 1⅞	0 11	3 2½	1 3	4 3	1 7	5 3⅝
7⅛	2 2⅜	0 11⅛	3 2⅞	1 3⅛	4 3⅜	1 7⅛	5 4
7¼	2 2¾	0 11¼	3 3¼	1 3¼	4 3¾	1 7¼	5 4⅜
7⅜	2 3⅛	0 11⅜	3 3⅝	1 3⅜	4 4⅛	1 7⅜	5 4¾
7½	2 3½	0 11½	3 4	1 3½	4 4½	1 7½	5 5⅛
7⅝	2 3⅞	0 11⅝	3 4⅜	1 3⅝	4 5	1 7⅝	5 5½
7¾	2 4¼	0 11¾	3 4⅞	1 3¾	4 5⅜	1 7¾	5 5⅞
7⅞	2 4⅝	0 11⅞	3 5¼	1 3⅞	4 5¾	1 7⅞	5 6⅜
8	2 5	1 0	3 5⅝	1 4	4 6⅛	1 8	5 6¾
8⅛	2 5½	1 0⅛	3 6	1 4⅛	4 6½	1 8⅛	5 7⅛
8¼	2 5⅞	1 0¼	3 6⅜	1 4¼	4 7	1 8¼	5 7½
8⅜	2 6¼	1 0⅜	3 6¾	1 4⅜	4 7⅜	1 8⅜	5 8
8½	2 6⅝	1 0½	3 7⅛	1 4½	4 7¾	1 8½	5 8⅜
8⅝	2 7	1 0⅝	3 7⅝	1 4⅝	4 8⅛	1 8⅝	5 8¾
8¾	2 7⅜	1 0¾	3 8	1 4¾	4 8½	1 8¾	5 9⅛
8⅞	2 7¾	1 0⅞	3 8⅜	1 4⅞	4 8⅞	1 8⅞	5 9½
9	2 8¼	1 1	3 8¾	1 5	4 9¼	1 9	5 9⅞
9⅛	2 8⅝	1 1⅛	3 9⅛	1 5⅛	4 9⅝	1 9⅛	5 10¼
9¼	2 9	1 1¼	3 9½	1 5¼	4 10⅛	1 9¼	5 10⅝
9⅜	2 9⅜	1 1⅜	3 9⅞	1 5⅜	4 10½	1 9⅜	5 11
9½	2 9¾	1 1½	3 10⅜	1 5½	4 10⅞	1 9½	5 11½
9⅝	2 10⅛	1 1⅝	3 10¾	1 5⅝	4 11¼	1 9⅝	5 11⅞
9¾	2 10½	1 1¾	3 11⅛	1 5¾	4 11⅝	1 9¾	6 0¼
9⅞	2 10⅞	1 1⅞	3 11½	1 5⅞	5 0	1 9⅞	6 0⅝

For Angle Iron measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
1	10	6	1	2	2	7	$1\frac{1}{2}$	2	6	8	$2\frac{1}{8}$	2	10	9	$2\frac{3}{4}$
1	$10\frac{1}{8}$	6	$1\frac{3}{8}$	2	$2\frac{1}{8}$	7	2	2	$6\frac{1}{8}$	8	$2\frac{1}{2}$	2	$10\frac{1}{8}$	9	$3\frac{1}{8}$
1	$10\frac{1}{4}$	6	$1\frac{3}{4}$	2	$2\frac{1}{4}$	7	$2\frac{3}{8}$	2	$6\frac{1}{4}$	8	$2\frac{7}{8}$	2	$10\frac{1}{4}$	9	$3\frac{1}{8}$
1	$10\frac{3}{8}$	6	$2\frac{1}{4}$	2	$2\frac{3}{8}$	7	$2\frac{3}{4}$	2	$6\frac{3}{8}$	8	$3\frac{3}{8}$	2	$10\frac{3}{8}$	9	$3\frac{7}{8}$
1	$10\frac{1}{2}$	6	$2\frac{5}{8}$	2	$2\frac{1}{2}$	7	$3\frac{1}{8}$	2	$6\frac{1}{2}$	8	$3\frac{3}{4}$	2	$10\frac{1}{2}$	9	$4\frac{1}{4}$
1	$10\frac{5}{8}$	6	3	2	$2\frac{5}{8}$	7	$3\frac{1}{2}$	2	$6\frac{5}{8}$	8	$4\frac{1}{8}$	2	$10\frac{5}{8}$	9	$4\frac{5}{8}$
1	$10\frac{3}{4}$	6	$3\frac{3}{8}$	2	$2\frac{3}{4}$	7	$3\frac{7}{8}$	2	$6\frac{3}{4}$	8	$4\frac{1}{2}$	2	$10\frac{3}{4}$	9	5
1	$10\frac{7}{8}$	6	$3\frac{3}{4}$	2	$2\frac{7}{8}$	7	$4\frac{3}{8}$	2	$6\frac{7}{8}$	8	$4\frac{7}{8}$	2	$10\frac{7}{8}$	9	$5\frac{1}{2}$
1	11	6	$4\frac{1}{8}$	2	3	7	$4\frac{3}{4}$	2	7	8	$5\frac{1}{4}$	2	11	9	$5\frac{7}{8}$
1	$11\frac{1}{8}$	6	$4\frac{1}{2}$	2	$3\frac{1}{8}$	7	$5\frac{1}{8}$	2	$7\frac{1}{8}$	8	$5\frac{5}{8}$	2	$11\frac{1}{8}$	9	$6\frac{1}{4}$
1	$11\frac{1}{4}$	6	$4\frac{7}{8}$	2	$3\frac{1}{4}$	7	$5\frac{1}{2}$	2	$7\frac{1}{4}$	8	6	2	$11\frac{1}{4}$	9	$6\frac{5}{8}$
1	$11\frac{3}{8}$	6	$5\frac{3}{8}$	2	$3\frac{3}{8}$	7	$5\frac{7}{8}$	2	$7\frac{3}{8}$	8	$6\frac{1}{2}$	2	$11\frac{3}{8}$	9	7
1	$11\frac{1}{2}$	6	$5\frac{3}{4}$	2	$3\frac{1}{2}$	7	$6\frac{1}{4}$	2	$7\frac{1}{2}$	8	$6\frac{7}{8}$	2	$11\frac{1}{2}$	9	$7\frac{3}{8}$
1	$11\frac{5}{8}$	6	$6\frac{1}{8}$	2	$3\frac{5}{8}$	7	$6\frac{5}{8}$	2	$7\frac{5}{8}$	8	$7\frac{1}{4}$	2	$11\frac{5}{8}$	9	$7\frac{7}{8}$
1	$11\frac{3}{4}$	6	$6\frac{1}{2}$	2	$3\frac{3}{4}$	7	7	2	$7\frac{3}{4}$	8	$7\frac{5}{8}$	2	$11\frac{3}{4}$	9	$8\frac{1}{4}$
1	$11\frac{7}{8}$	6	$6\frac{7}{8}$	2	$3\frac{7}{8}$	7	$7\frac{1}{2}$	2	$7\frac{7}{8}$	8	8	2	$11\frac{7}{8}$	9	$8\frac{5}{8}$
2	0	6	$7\frac{1}{4}$	2	4	7	$7\frac{7}{8}$	2	8	8	$8\frac{3}{8}$	3	0	9	9
2	$0\frac{1}{8}$	6	$7\frac{5}{8}$	2	$4\frac{1}{8}$	7	$8\frac{1}{4}$	2	$8\frac{1}{8}$	8	$8\frac{7}{8}$	3	$0\frac{1}{8}$	9	$9\frac{3}{8}$
2	$0\frac{1}{4}$	6	$8\frac{1}{8}$	2	$4\frac{1}{4}$	7	$8\frac{5}{8}$	2	$8\frac{1}{4}$	8	$9\frac{1}{4}$	3	$0\frac{1}{4}$	9	$9\frac{3}{4}$
2	$0\frac{3}{8}$	6	$8\frac{1}{2}$	2	$4\frac{3}{8}$	7	9	2	$8\frac{3}{8}$	8	$9\frac{5}{8}$	3	$0\frac{3}{8}$	9	$10\frac{1}{8}$
2	$0\frac{1}{2}$	6	$8\frac{7}{8}$	2	$4\frac{1}{2}$	7	$9\frac{3}{8}$	2	$8\frac{1}{2}$	8	10	3	$0\frac{1}{2}$	9	$10\frac{1}{8}$
2	$0\frac{5}{8}$	6	$9\frac{1}{4}$	2	$4\frac{5}{8}$	7	$9\frac{3}{4}$	2	$8\frac{5}{8}$	8	$10\frac{3}{8}$	3	$0\frac{5}{8}$	9	$10\frac{7}{8}$
2	$0\frac{3}{4}$	6	$9\frac{5}{8}$	2	$4\frac{3}{4}$	7	$10\frac{1}{8}$	2	$8\frac{3}{4}$	8	$10\frac{3}{4}$	3	$0\frac{3}{4}$	9	$11\frac{3}{8}$
2	$0\frac{7}{8}$	6	10	2	$4\frac{7}{8}$	7	$10\frac{5}{8}$	2	$8\frac{7}{8}$	8	$11\frac{1}{8}$	3	$0\frac{7}{8}$	9	$11\frac{3}{4}$
2	1	6	$10\frac{1}{2}$	2	5	7	11	2	9	8	$11\frac{1}{2}$	3	1	10	$0\frac{1}{8}$
2	$1\frac{1}{8}$	6	$10\frac{7}{8}$	2	$5\frac{1}{8}$	7	$11\frac{3}{8}$	2	$9\frac{1}{8}$	9	0	3	$1\frac{1}{8}$	10	$0\frac{1}{4}$
2	$1\frac{1}{4}$	6	$11\frac{1}{4}$	2	$5\frac{1}{4}$	7	$11\frac{3}{4}$	2	$9\frac{1}{4}$	9	$0\frac{3}{8}$	3	$1\frac{1}{4}$	10	$0\frac{7}{8}$
2	$1\frac{3}{8}$	6	$11\frac{5}{8}$	2	$5\frac{3}{8}$	8	$0\frac{1}{4}$	2	$9\frac{3}{8}$	9	$0\frac{3}{4}$	3	$1\frac{3}{8}$	10	$1\frac{3}{8}$
2	$1\frac{1}{2}$	7	0	2	$5\frac{1}{2}$	8	$0\frac{1}{2}$	2	$9\frac{1}{2}$	9	$1\frac{1}{8}$	3	$1\frac{1}{2}$	10	$1\frac{3}{4}$
2	$1\frac{5}{8}$	7	$0\frac{3}{8}$	2	$5\frac{5}{8}$	8	1	2	$9\frac{5}{8}$	9	$1\frac{1}{2}$	3	$1\frac{5}{8}$	10	$2\frac{1}{8}$
2	$1\frac{3}{4}$	7	$0\frac{3}{4}$	2	$5\frac{3}{4}$	8	$1\frac{3}{8}$	2	$9\frac{3}{4}$	9	$1\frac{7}{8}$	3	$1\frac{3}{4}$	10	$2\frac{1}{2}$
2	$1\frac{7}{8}$	7	$1\frac{1}{8}$	2	$5\frac{7}{8}$	8	$1\frac{3}{4}$	2	$9\frac{7}{8}$	9	$2\frac{3}{8}$	3	$1\frac{7}{8}$	10	$2\frac{7}{8}$

'or ANGLE IRON measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
3	2	10	3 1/4	3	6	11	3 7/8	3	10	12	4 3/8	4	2	13	5
3	2 1/8	10	3 3/8	3	6 1/8	11	4 1/4	3	10 1/8	12	4 3/4	4	2 1/8	13	5 3/8
3	2 1/4	10	4	3	6 1/4	11	4 3/8	3	10 1/4	12	5 1/4	4	2 1/4	13	5 3/4
3	2 3/8	10	4 1/2	3	6 3/8	11	5	3	10 3/8	12	5 5/8	4	2 3/8	13	6 1/8
3	2 1/2	10	4 7/8	3	6 1/2	11	5 3/8	3	10 1/2	12	6	4	2 1/2	13	6 1/2
3	2 5/8	10	5 1/4	3	6 5/8	11	5 3/4	3	10 5/8	12	6 3/8	4	2 5/8	13	7
3	2 3/4	10	5 5/8	3	6 3/4	11	6 1/4	3	10 3/4	12	6 3/4	4	2 3/4	13	7 3/8
3	2 7/8	10	6	3	6 7/8	11	6 5/8	3	10 7/8	12	7 1/8	4	2 7/8	13	7 3/4
3	3	10	6 3/8	3	7	11	7	3	11	12	7 1/2	4	3	13	8 1/8
3	3 1/8	10	6 7/8	3	7 1/8	11	7 3/8	3	11 1/8	12	7 7/8	4	3 1/8	13	8 1/2
3	3 1/4	10	7 1/4	3	7 1/4	11	7 3/4	3	11 1/4	12	8 3/8	4	3 1/4	13	8 7/8
3	3 3/8	10	7 5/8	3	7 3/8	11	8 1/8	3	11 3/8	12	8 3/4	4	3 3/8	13	9 1/4
3	3 1/2	10	8	3	7 1/2	11	8 1/2	3	11 1/2	12	9 1/8	4	3 1/2	13	9 5/8
3	3 5/8	10	8 3/8	3	7 5/8	11	8 7/8	3	11 5/8	12	9 1/2	4	3 5/8	13	10 1/8
3	3 3/4	10	8 3/4	3	7 3/4	11	9 3/8	3	11 3/4	12	9 7/8	4	3 3/4	13	10 1/2
3	3 7/8	10	9 1/8	3	7 7/8	11	9 3/4	3	11 7/8	12	10 3/8	4	3 7/8	13	10 7/8
3	4	10	9 1/2	3	8	11	10 1/8	4	0	12	10 3/4	4	4	13	11 1/4
3	4 1/8	10	9 7/8	3	8 1/8	11	10 1/2	4	0 1/8	12	11 1/8	4	4 1/8	13	11 5/8
3	4 1/4	10	10 3/8	3	8 1/4	11	10 7/8	4	0 1/4	12	11 1/2	4	4 1/4	14	0
3	4 3/8	10	10 3/4	3	8 3/8	11	11 1/4	4	0 3/8	12	11 7/8	4	4 3/8	14	0 3/8
3	4 1/2	10	11 1/8	3	8 1/2	11	11 5/8	4	0 1/2	13	0 1/4	4	4 1/2	14	0 7/8
3	4 5/8	10	11 1/2	3	8 5/8	12	0 1/8	4	0 5/8	13	0 5/8	4	4 5/8	14	1 1/4
3	4 3/4	10	11 7/8	3	8 3/4	12	0 1/2	4	0 3/4	13	1	4	4 3/4	14	1 5/8
3	4 7/8	11	0 3/8	3	8 7/8	12	0 7/8	4	0 7/8	13	1 1/2	4	4 7/8	14	2
3	5	11	0 3/4	3	9	12	1 1/4	4	1	13	1 7/8	4	5	14	2 3/8
3	5 1/8	11	1 1/8	3	9 1/8	12	1 5/8	4	1 1/8	13	2 1/4	4	5 1/8	14	2 3/4
3	5 1/4	11	1 1/2	3	9 1/4	12	2	4	1 1/4	13	2 5/8	4	5 1/4	14	3 1/8
3	5 3/8	11	1 7/8	3	9 3/8	12	2 3/8	4	1 3/8	13	3	4	5 3/8	14	3 1/4
3	5 1/2	11	2 1/4	3	9 1/2	12	2 7/8	4	1 1/2	13	3 3/8	4	5 1/2	14	4
3	5 5/8	11	2 5/8	3	9 5/8	12	3 1/4	4	1 5/8	13	3 3/4	4	5 5/8	14	4 3/8
3	5 3/4	11	3	3	9 3/4	12	3 5/8	4	1 3/4	13	4 1/4	4	5 3/4	14	4 3/4
3	5 7/8	11	3 1/2	3	9 7/8	12	4	4	1 7/8	13	4 5/8	4	5 7/8	14	5 1/8

For Angle Iron measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
1	10	6	1	2	2	7	$1\frac{1}{2}$	2	6	8	$2\frac{1}{8}$	2	10	9	$2\frac{3}{4}$
1	$10\frac{1}{8}$	6	$1\frac{3}{8}$	2	$2\frac{1}{8}$	7	2	2	$6\frac{1}{8}$	8	$2\frac{1}{2}$	2	$10\frac{1}{8}$	9	$3\frac{1}{8}$
1	$10\frac{1}{4}$	6	$1\frac{3}{4}$	2	$2\frac{1}{4}$	7	$2\frac{3}{8}$	2	$6\frac{1}{4}$	8	$2\frac{7}{8}$	2	$10\frac{1}{4}$	9	$3\frac{1}{4}$
1	$10\frac{3}{8}$	6	$2\frac{1}{4}$	2	$2\frac{3}{8}$	7	$2\frac{3}{4}$	2	$6\frac{3}{8}$	8	$3\frac{3}{8}$	2	$10\frac{3}{8}$	9	$3\frac{7}{8}$
1	$10\frac{1}{2}$	6	$2\frac{5}{8}$	2	$2\frac{1}{2}$	7	$3\frac{1}{8}$	2	$6\frac{1}{2}$	8	$3\frac{3}{4}$	2	$10\frac{1}{2}$	9	$4\frac{1}{4}$
1	$10\frac{5}{8}$	6	3	2	$2\frac{5}{8}$	7	$3\frac{1}{2}$	2	$6\frac{5}{8}$	8	$4\frac{1}{8}$	2	$10\frac{5}{8}$	9	$4\frac{5}{8}$
1	$10\frac{3}{4}$	6	$3\frac{3}{8}$	2	$2\frac{3}{4}$	7	$3\frac{7}{8}$	2	$6\frac{3}{4}$	8	$4\frac{1}{2}$	2	$10\frac{3}{4}$	9	5
1	$10\frac{7}{8}$	6	$3\frac{3}{4}$	2	$2\frac{7}{8}$	7	$4\frac{3}{8}$	2	$6\frac{7}{8}$	8	$4\frac{7}{8}$	2	$10\frac{7}{8}$	9	$5\frac{1}{8}$
1	11	6	$4\frac{1}{8}$	2	3	7	$4\frac{3}{4}$	2	7	8	$5\frac{1}{4}$	2	11	9	$5\frac{7}{8}$
1	$11\frac{1}{8}$	6	$4\frac{1}{2}$	2	$3\frac{1}{8}$	7	$5\frac{1}{8}$	2	$7\frac{1}{8}$	8	$5\frac{5}{8}$	2	$11\frac{1}{8}$	9	$6\frac{1}{4}$
1	$11\frac{1}{4}$	6	$4\frac{7}{8}$	2	$3\frac{1}{4}$	7	$5\frac{1}{2}$	2	$7\frac{1}{4}$	8	6	2	$11\frac{1}{4}$	9	$6\frac{5}{8}$
1	$11\frac{3}{8}$	6	$5\frac{3}{8}$	2	$3\frac{3}{8}$	7	$5\frac{7}{8}$	2	$7\frac{3}{8}$	8	$6\frac{1}{2}$	2	$11\frac{3}{8}$	9	7
1	$11\frac{1}{2}$	6	$5\frac{3}{4}$	2	$3\frac{1}{2}$	7	$6\frac{1}{4}$	2	$7\frac{1}{2}$	8	$6\frac{7}{8}$	2	$11\frac{1}{2}$	9	$7\frac{3}{8}$
1	$11\frac{5}{8}$	6	$6\frac{1}{8}$	2	$3\frac{5}{8}$	7	$6\frac{5}{8}$	2	$7\frac{5}{8}$	8	$7\frac{1}{4}$	2	$11\frac{5}{8}$	9	$7\frac{7}{8}$
1	$11\frac{3}{4}$	6	$6\frac{1}{2}$	2	$3\frac{3}{4}$	7	7	2	$7\frac{3}{4}$	8	$7\frac{5}{8}$	2	$11\frac{3}{4}$	9	$8\frac{1}{4}$
1	$11\frac{7}{8}$	6	$6\frac{7}{8}$	2	$3\frac{7}{8}$	7	$7\frac{1}{2}$	2	$7\frac{7}{8}$	8	8	2	$11\frac{7}{8}$	9	$8\frac{5}{8}$
2	0	6	$7\frac{1}{4}$	2	4	7	$7\frac{7}{8}$	2	8	8	$8\frac{3}{8}$	3	0	9	9
2	$0\frac{1}{8}$	6	$7\frac{5}{8}$	2	$4\frac{1}{8}$	7	$8\frac{1}{4}$	2	$8\frac{1}{8}$	8	$8\frac{7}{8}$	3	$0\frac{1}{8}$	9	$9\frac{3}{8}$
2	$0\frac{1}{4}$	6	$8\frac{1}{8}$	2	$4\frac{1}{4}$	7	$8\frac{5}{8}$	2	$8\frac{1}{4}$	8	$9\frac{1}{4}$	3	$0\frac{1}{4}$	9	$9\frac{3}{4}$
2	$0\frac{3}{8}$	6	$8\frac{1}{2}$	2	$4\frac{3}{8}$	7	9	2	$8\frac{3}{8}$	8	$9\frac{5}{8}$	3	$0\frac{3}{8}$	9	$10\frac{1}{8}$
2	$0\frac{1}{2}$	6	$8\frac{7}{8}$	2	$4\frac{1}{2}$	7	$9\frac{3}{8}$	2	$8\frac{1}{2}$	8	10	3	$0\frac{1}{2}$	9	$10\frac{1}{4}$
2	$0\frac{5}{8}$	6	$9\frac{1}{4}$	2	$4\frac{5}{8}$	7	$9\frac{3}{4}$	2	$8\frac{5}{8}$	8	$10\frac{3}{8}$	3	$0\frac{5}{8}$	9	$10\frac{7}{8}$
2	$0\frac{3}{4}$	6	$9\frac{5}{8}$	2	$4\frac{3}{4}$	7	$10\frac{1}{4}$	2	$8\frac{3}{4}$	8	$10\frac{3}{4}$	3	$0\frac{3}{4}$	9	$11\frac{3}{8}$
2	$0\frac{7}{8}$	6	10	2	$4\frac{7}{8}$	7	$10\frac{5}{8}$	2	$8\frac{7}{8}$	8	$11\frac{1}{8}$	3	$0\frac{7}{8}$	9	$11\frac{3}{4}$
2	1	6	$10\frac{1}{2}$	2	5	7	11	2	9	8	$11\frac{1}{2}$	3	1	10	$0\frac{1}{8}$
2	$1\frac{1}{8}$	6	$10\frac{7}{8}$	2	$5\frac{1}{8}$	7	$11\frac{3}{8}$	2	$9\frac{1}{8}$	9	0	3	$1\frac{1}{8}$	10	$0\frac{1}{2}$
2	$1\frac{1}{4}$	6	$11\frac{1}{4}$	2	$5\frac{1}{4}$	7	$11\frac{3}{4}$	2	$9\frac{1}{4}$	9	$0\frac{3}{8}$	3	$1\frac{1}{4}$	10	$0\frac{7}{8}$
2	$1\frac{3}{8}$	6	$11\frac{5}{8}$	2	$5\frac{3}{8}$	8	$0\frac{1}{8}$	2	$9\frac{3}{8}$	9	$0\frac{3}{4}$	3	$1\frac{3}{8}$	10	$1\frac{3}{8}$
2	$1\frac{1}{2}$	7	0	2	$5\frac{1}{2}$	8	$0\frac{1}{2}$	2	$9\frac{1}{2}$	9	$1\frac{1}{8}$	3	$1\frac{1}{2}$	10	$1\frac{1}{4}$
2	$1\frac{5}{8}$	7	$0\frac{3}{8}$	2	$5\frac{5}{8}$	8	1	2	$9\frac{5}{8}$	9	$1\frac{1}{2}$	3	$1\frac{5}{8}$	10	$2\frac{1}{8}$
2	$1\frac{3}{4}$	7	$0\frac{3}{4}$	2	$5\frac{3}{4}$	8	$1\frac{3}{8}$	2	$9\frac{3}{4}$	9	$1\frac{7}{8}$	3	$1\frac{3}{4}$	10	$2\frac{1}{2}$
2	$1\frac{7}{8}$	7	$1\frac{1}{8}$	2	$5\frac{7}{8}$	8	$1\frac{3}{4}$	2	$9\frac{7}{8}$	9	$2\frac{3}{8}$	3	$1\frac{7}{8}$	10	$2\frac{7}{8}$

'or ANGLE IRON measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
3	2	10	3¼	3	6	11	3⅞	3	10	12	4⅜	4	2	13	5
3	2⅛	10	3⅜	3	6⅛	11	4¼	3	10⅛	12	4¾	4	2⅛	13	5⅜
3	2¼	10	4	3	6¼	11	4⅜	3	10¼	12	5¼	4	2¼	13	5¾
3	2⅜	10	4¼	3	6⅜	11	5	3	10⅜	12	5⅝	4	2⅜	13	6⅛
3	2½	10	4⅞	3	6½	11	5⅜	3	10½	12	6	4	2½	13	6½
3	2⅝	10	5¼	3	6⅝	11	5¾	3	10⅝	12	6⅜	4	2⅝	13	7
3	2¾	10	5⅝	3	6¾	11	6¼	3	10¾	12	6¾	4	2¾	13	7⅜
3	2⅞	10	6	3	6⅞	11	6⅝	3	10⅞	12	7⅛	4	2⅞	13	7¾
3	3	10	6⅜	3	7	11	7	3	11	12	7½	4	3	13	8⅛
3	3⅛	10	6⅞	3	7⅛	11	7⅜	3	11⅛	12	7⅞	4	3⅛	13	8½
3	3¼	10	7¼	3	7¼	11	7¾	3	11¼	12	8⅜	4	3¼	13	8⅞
3	3⅜	10	7⅝	3	7⅜	11	8⅛	3	11⅜	12	8¾	4	3⅜	13	9¼
3	3½	10	8	3	7½	11	8½	3	11½	12	9⅛	4	3½	13	9⅝
3	3⅝	10	8⅜	3	7⅝	11	8⅞	3	11⅝	12	9½	4	3⅝	13	10⅛
3	3¾	10	8¾	3	7¾	11	9⅜	3	11¾	12	9⅞	4	3¾	13	10½
3	3⅞	10	9⅛	3	7⅞	11	9¾	3	11⅞	12	10⅜	4	3⅞	13	10⅞
3	4	10	9½	3	8	11	10⅛	4	0	12	10¾	4	4	13	11¼
3	4⅛	10	9⅞	3	8⅛	11	10½	4	0⅛	12	11⅛	4	4⅛	13	11⅝
3	4¼	10	10⅜	3	8¼	11	10⅞	4	0¼	12	11½	4	4¼	14	0
3	4⅜	10	10¾	3	8⅜	11	11¼	4	0⅜	12	11⅞	4	4⅜	14	0⅜
3	4½	10	11⅛	3	8½	11	11⅝	4	0½	13	0¼	4	4½	14	0⅞
3	4⅝	10	11½	3	8⅝	12	0⅛	4	0⅝	13	0⅝	4	4⅝	14	1¼
3	4¾	10	11⅞	3	8¾	12	0½	4	0¾	13	1	4	4¾	14	1⅝
3	4⅞	11	0⅜	3	8⅞	12	0⅞	4	0⅞	13	1½	4	4⅞	14	2
3	5	11	0¾	3	9	12	1¼	4	1	13	1⅞	4	5	14	2⅜
3	5⅛	11	1⅛	3	9⅛	12	1⅝	4	1⅛	13	2¼	4	5⅛	14	2¾
3	5¼	11	1½	3	9¼	12	2	4	1¼	13	2⅝	4	5¼	14	3⅛
3	5⅜	11	1⅞	3	9⅜	12	2⅜	4	1⅜	13	3	4	5⅜	14	3½
3	5½	11	2¼	3	9½	12	2⅞	4	1½	13	3⅜	4	5½	14	4
3	5⅝	11	2⅝	3	9⅝	12	3¼	4	1⅝	13	3¾	4	5⅝	14	4⅜
3	5¾	11	3	3	9¾	12	3⅝	4	1¾	13	4¼	4	5¾	14	4¾
3	5⅞	11	3½	3	9⅞	12	4	4	1⅞	13	4⅝	4	5⅞	14	5⅛

For ANGLE IRON measuring $\frac{3}{8}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
7	2	22	$8\frac{1}{2}$	7	6	23	$9\frac{1}{8}$	7	10	24	$9\frac{5}{8}$	8	2	25	$10\frac{1}{4}$
7	$2\frac{1}{8}$	22	$8\frac{7}{8}$	7	$6\frac{1}{8}$	23	$9\frac{1}{2}$	7	$10\frac{1}{8}$	24	10	8	$2\frac{1}{8}$	25	$10\frac{5}{8}$
7	$2\frac{1}{4}$	22	$9\frac{1}{4}$	7	$6\frac{1}{4}$	23	$9\frac{7}{8}$	7	$10\frac{1}{4}$	24	$10\frac{1}{2}$	8	$2\frac{1}{4}$	25	11
7	$2\frac{3}{8}$	22	$9\frac{3}{4}$	7	$6\frac{3}{8}$	23	$10\frac{1}{4}$	7	$10\frac{3}{8}$	24	$10\frac{7}{8}$	8	$2\frac{3}{8}$	25	$11\frac{3}{8}$
7	$2\frac{1}{2}$	22	$10\frac{1}{8}$	7	$6\frac{1}{2}$	23	$10\frac{5}{8}$	7	$10\frac{1}{2}$	24	$11\frac{1}{4}$	8	$2\frac{1}{2}$	25	$11\frac{3}{4}$
7	$2\frac{5}{8}$	22	$10\frac{1}{2}$	7	$6\frac{5}{8}$	23	11	7	$10\frac{5}{8}$	24	$11\frac{5}{8}$	8	$2\frac{5}{8}$	26	$0\frac{1}{8}$
7	$2\frac{3}{4}$	22	$10\frac{7}{8}$	7	$6\frac{3}{4}$	23	$11\frac{1}{2}$	7	$10\frac{3}{4}$	25	0	8	$2\frac{3}{4}$	26	$0\frac{3}{8}$
7	$2\frac{7}{8}$	22	$11\frac{1}{4}$	7	$6\frac{7}{8}$	23	$11\frac{7}{8}$	7	$10\frac{7}{8}$	25	$0\frac{3}{8}$	8	$2\frac{7}{8}$	26	1
7	3	22	$11\frac{5}{8}$	7	7	24	$0\frac{1}{4}$	7	11	25	$0\frac{3}{4}$	8	3	26	$1\frac{3}{8}$
7	$3\frac{1}{8}$	23	0	7	$7\frac{1}{8}$	24	$0\frac{5}{8}$	7	$11\frac{1}{8}$	25	$1\frac{1}{4}$	8	$3\frac{1}{8}$	26	$1\frac{3}{4}$
7	$3\frac{1}{4}$	23	$0\frac{1}{2}$	7	$7\frac{1}{4}$	24	1	7	$11\frac{1}{4}$	25	$1\frac{5}{8}$	8	$3\frac{1}{4}$	26	$2\frac{1}{8}$
7	$3\frac{3}{8}$	23	$0\frac{7}{8}$	7	$7\frac{3}{8}$	24	$1\frac{3}{8}$	7	$11\frac{3}{8}$	25	2	8	$3\frac{3}{8}$	26	$2\frac{1}{2}$
7	$3\frac{1}{2}$	23	$1\frac{1}{4}$	7	$7\frac{1}{2}$	24	$1\frac{3}{4}$	7	$11\frac{1}{2}$	25	$2\frac{3}{8}$	8	$3\frac{1}{2}$	26	$2\frac{7}{8}$
7	$3\frac{5}{8}$	23	$1\frac{5}{8}$	7	$7\frac{5}{8}$	24	$2\frac{1}{4}$	7	$11\frac{5}{8}$	25	$2\frac{3}{4}$	8	$3\frac{5}{8}$	26	$3\frac{3}{8}$
7	$3\frac{3}{4}$	23	2	7	$7\frac{3}{4}$	24	$2\frac{3}{8}$	7	$11\frac{3}{4}$	25	$3\frac{1}{8}$	8	$3\frac{3}{4}$	26	$3\frac{3}{4}$
7	$3\frac{7}{8}$	23	$2\frac{3}{8}$	7	$7\frac{7}{8}$	24	3	7	$11\frac{7}{8}$	25	$3\frac{1}{2}$	8	$3\frac{7}{8}$	26	$4\frac{1}{8}$
7	4	23	$2\frac{3}{4}$	7	8	24	$3\frac{3}{8}$	8	0	25	$3\frac{7}{8}$	8	4	26	$4\frac{1}{2}$
7	$4\frac{1}{8}$	23	$3\frac{1}{4}$	7	$8\frac{1}{8}$	24	$3\frac{3}{4}$	8	$0\frac{1}{8}$	25	$4\frac{3}{8}$	8	$4\frac{1}{8}$	26	$4\frac{7}{8}$
7	$4\frac{1}{4}$	23	$3\frac{5}{8}$	7	$8\frac{1}{4}$	24	$4\frac{1}{8}$	8	$0\frac{1}{4}$	25	$4\frac{3}{4}$	8	$4\frac{1}{4}$	26	$5\frac{1}{4}$
7	$4\frac{3}{8}$	23	4	7	$8\frac{3}{8}$	24	$4\frac{1}{2}$	8	$0\frac{3}{8}$	25	$5\frac{1}{8}$	8	$4\frac{3}{8}$	26	$5\frac{5}{8}$
7	$4\frac{1}{2}$	23	$4\frac{3}{8}$	7	$8\frac{1}{2}$	24	$4\frac{7}{8}$	8	$0\frac{1}{2}$	25	$5\frac{1}{2}$	8	$4\frac{1}{2}$	26	6
7	$4\frac{5}{8}$	23	$4\frac{3}{4}$	7	$8\frac{5}{8}$	24	$5\frac{3}{8}$	8	$0\frac{5}{8}$	25	$5\frac{7}{8}$	8	$4\frac{5}{8}$	26	$6\frac{1}{4}$
7	$4\frac{3}{4}$	23	$5\frac{1}{8}$	7	$8\frac{3}{4}$	24	$5\frac{3}{4}$	8	$0\frac{3}{4}$	25	$6\frac{1}{4}$	8	$4\frac{3}{4}$	26	$6\frac{7}{8}$
7	$4\frac{7}{8}$	23	$5\frac{1}{2}$	7	$8\frac{7}{8}$	24	$6\frac{1}{8}$	8	$0\frac{7}{8}$	25	$6\frac{5}{8}$	8	$4\frac{7}{8}$	26	$7\frac{1}{4}$
7	5	23	6	7	9	24	$6\frac{1}{2}$	8	1	25	7	8	5	26	$7\frac{5}{8}$
7	$5\frac{1}{8}$	23	$6\frac{3}{8}$	7	$9\frac{1}{8}$	24	$6\frac{7}{8}$	8	$1\frac{1}{8}$	25	$7\frac{1}{2}$	8	$5\frac{1}{8}$	26	8
7	$5\frac{1}{4}$	23	$6\frac{3}{4}$	7	$9\frac{1}{4}$	24	$7\frac{1}{4}$	8	$1\frac{1}{4}$	25	$7\frac{7}{8}$	8	$5\frac{1}{4}$	26	$8\frac{3}{8}$
7	$5\frac{3}{8}$	23	$7\frac{1}{8}$	7	$9\frac{3}{8}$	24	$7\frac{5}{8}$	8	$1\frac{3}{8}$	25	$8\frac{1}{4}$	8	$5\frac{3}{8}$	26	$8\frac{7}{8}$
7	$5\frac{1}{2}$	23	$7\frac{1}{2}$	7	$9\frac{1}{2}$	24	8	8	$1\frac{1}{2}$	25	$8\frac{5}{8}$	8	$5\frac{1}{2}$	26	$9\frac{1}{4}$
7	$5\frac{5}{8}$	23	$7\frac{7}{8}$	7	$9\frac{5}{8}$	24	$8\frac{1}{2}$	8	$1\frac{5}{8}$	25	9	8	$5\frac{5}{8}$	26	$9\frac{5}{8}$
7	$5\frac{3}{4}$	23	$8\frac{1}{4}$	7	$9\frac{3}{4}$	24	$8\frac{7}{8}$	8	$1\frac{3}{4}$	25	$9\frac{1}{2}$	8	$5\frac{3}{4}$	26	10
7	$5\frac{7}{8}$	23	$8\frac{1}{4}$	7	$9\frac{7}{8}$	24	$9\frac{1}{4}$	8	$1\frac{7}{8}$	25	$9\frac{7}{8}$	8	$5\frac{7}{8}$	26	$10\frac{3}{8}$

.E IRON measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
18	7 1/8	6	2	19	8 3/8	6	6	20	9	6	10	21	9 1/2
18	8 1/4	6	2 1/8	19	8 3/4	6	6 1/8	20	9 3/8	6	10 1/8	21	9 7/8
18	8 5/8	6	2 1/4	19	9 1/8	6	6 1/4	20	9 3/4	6	10 1/4	21	10 3/8
18	9	6	2 3/8	19	9 5/8	6	6 3/8	20	10 1/8	6	10 3/8	21	10 3/4
18	9 3/8	6	2 1/2	19	10	6	6 1/2	20	10 1/2	6	10 1/2	21	11 1/8
18	9 3/4	6	2 5/8	19	10 3/8	6	6 5/8	20	10 7/8	6	10 5/8	21	11 1/2
18	10 1/8	6	2 3/4	19	10 3/4	6	6 3/4	20	11 1/8	6	10 3/4	21	11 7/8
18	10 1/2	6	2 7/8	19	11 1/8	6	6 7/8	20	11 3/4	6	10 7/8	22	0 1/4
18	11	6	3	19	11 1/2	6	7	21	0 1/8	6	11	22	0 5/8
18	11 3/8	6	3 1/8	19	11 7/8	6	7 1/8	21	0 1/2	6	11 1/8	22	1
18	11 3/4	6	3 1/4	20	0 3/8	6	7 1/4	21	0 7/8	6	11 1/4	22	1 1/2
19	0 1/8	6	3 3/8	20	0 3/4	6	7 3/8	21	1 1/4	6	11 3/8	22	1 7/8
19	0 1/2	6	3 1/2	20	1 1/8	6	7 1/2	21	1 5/8	6	11 1/2	22	2 1/4
19	0 7/8	6	3 5/8	20	1 1/2	6	7 5/8	21	2	6	11 5/8	22	2 5/8
19	1 3/8	6	3 3/4	20	1 7/8	6	7 3/4	21	2 1/2	6	11 3/4	22	3
19	1 3/4	6	3 7/8	20	2 1/4	6	7 7/8	21	2 7/8	6	11 7/8	22	3 3/8
19	2 1/8	6	4	20	2 5/8	6	8	21	3 1/4	7	0	22	3 7/8
19	2 1/2	6	4 1/8	20	3	6	8 1/8	21	3 5/8	7	0 1/8	22	4 1/4
19	2 7/8	6	4 1/4	20	3 1/2	6	8 1/4	21	4	7	0 1/4	22	4 5/8
19	3 1/4	6	4 3/8	20	3 7/8	6	8 3/8	21	4 3/8	7	0 3/8	22	5
19	3 5/8	6	4 1/2	20	4 1/4	6	8 1/2	21	4 3/4	7	0 1/2	22	5 3/8
19	4	6	4 5/8	20	4 5/8	6	8 5/8	21	5 1/8	7	0 5/8	22	5 3/4
19	4 1/2	6	4 3/4	20	5	6	8 3/4	21	5 1/2	7	0 3/4	22	6 1/8
19	4 7/8	6	4 7/8	20	5 3/8	6	8 7/8	21	6	7	0 7/8	22	6 1/4
19	5 1/4	6	5	20	5 7/8	6	9	21	6 3/8	7	1	22	7
19	5 5/8	6	5 1/8	20	6 1/4	6	9 1/8	21	6 3/4	7	1 1/8	22	7 3/8
19	6	6	5 1/4	20	6 5/8	6	9 1/4	21	7 1/8	7	1 1/4	22	7 3/4
19	6 3/8	6	5 3/8	20	7	6	9 3/8	21	7 5/8	7	1 3/8	22	8 1/8
19	6 7/8	6	5 1/2	20	7 3/8	6	9 1/2	21	8	7	1 1/2	22	8 1/2
19	7 1/4	6	5 5/8	20	7 3/4	6	9 5/8	21	8 3/8	7	1 5/8	22	8 7/8
19	7 5/8	6	5 3/4	20	8 1/8	6	9 3/4	21	8 3/4	7	1 3/4	22	9 1/4
19	8	6	5 7/8	20	8 1/2	6	9 7/8	21	9 1/8	7	1 7/8	22	9 3/4

For Angle Iron measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
7	2	22	$10\frac{1}{8}$	7	6	23	$10\frac{5}{8}$	7	10	24	$11\frac{1}{4}$	8	2	25	$11\frac{3}{4}$
7	$2\frac{1}{8}$	22	$10\frac{1}{2}$	7	$6\frac{1}{8}$	23	11	7	$10\frac{1}{8}$	24	$11\frac{5}{8}$	8	$2\frac{1}{8}$	26	$0\frac{1}{8}$
7	$2\frac{1}{4}$	22	$10\frac{7}{8}$	7	$6\frac{1}{4}$	23	$11\frac{1}{2}$	7	$10\frac{1}{4}$	25	0	8	$2\frac{1}{4}$	26	$0\frac{5}{8}$
7	$2\frac{3}{8}$	22	$11\frac{1}{4}$	7	$6\frac{3}{8}$	23	$11\frac{7}{8}$	7	$10\frac{3}{8}$	25	$0\frac{3}{8}$	8	$2\frac{3}{8}$	26	1
7	$2\frac{1}{2}$	22	$11\frac{5}{8}$	7	$6\frac{1}{2}$	24	$0\frac{1}{4}$	7	$10\frac{1}{2}$	25	$0\frac{3}{4}$	8	$2\frac{1}{2}$	26	$1\frac{3}{8}$
7	$2\frac{5}{8}$	23	0	7	$6\frac{5}{8}$	24	$0\frac{5}{8}$	7	$10\frac{5}{8}$	25	$1\frac{1}{4}$	8	$2\frac{5}{8}$	26	$1\frac{3}{4}$
7	$2\frac{3}{4}$	23	$0\frac{1}{2}$	7	$6\frac{3}{4}$	24	1	7	$10\frac{3}{4}$	25	$1\frac{5}{8}$	8	$2\frac{3}{4}$	26	$2\frac{1}{8}$
7	$2\frac{7}{8}$	23	$0\frac{7}{8}$	7	$6\frac{7}{8}$	24	$1\frac{3}{8}$	7	$10\frac{7}{8}$	25	2	8	$2\frac{7}{8}$	26	$2\frac{1}{2}$
7	3	23	$1\frac{1}{4}$	7	7	24	$1\frac{3}{4}$	7	11	25	$2\frac{3}{8}$	8	3	26	$2\frac{7}{8}$
7	$3\frac{1}{8}$	23	$1\frac{5}{8}$	7	$7\frac{1}{8}$	24	$2\frac{1}{4}$	7	$11\frac{1}{8}$	25	$2\frac{3}{4}$	8	$3\frac{1}{8}$	26	$3\frac{3}{8}$
7	$3\frac{1}{4}$	23	2	7	$7\frac{1}{4}$	24	$2\frac{5}{8}$	7	$11\frac{1}{4}$	25	$3\frac{1}{8}$	8	$3\frac{1}{4}$	26	$3\frac{3}{4}$
7	$3\frac{3}{8}$	23	$2\frac{3}{8}$	7	$7\frac{3}{8}$	24	3	7	$11\frac{3}{8}$	25	$3\frac{1}{2}$	8	$3\frac{3}{8}$	26	$4\frac{1}{8}$
7	$3\frac{1}{2}$	23	$2\frac{3}{4}$	7	$7\frac{1}{2}$	24	$3\frac{3}{8}$	7	$11\frac{1}{2}$	25	$3\frac{7}{8}$	8	$3\frac{1}{2}$	26	$4\frac{1}{2}$
7	$3\frac{5}{8}$	23	$3\frac{1}{4}$	7	$7\frac{5}{8}$	24	$3\frac{3}{4}$	7	$11\frac{5}{8}$	25	$4\frac{3}{8}$	8	$3\frac{5}{8}$	26	$4\frac{7}{8}$
7	$3\frac{3}{4}$	23	$3\frac{5}{8}$	7	$7\frac{3}{4}$	24	$4\frac{1}{8}$	7	$11\frac{3}{4}$	25	$4\frac{3}{4}$	8	$3\frac{3}{4}$	26	$5\frac{1}{4}$
7	$3\frac{7}{8}$	23	4	7	$7\frac{7}{8}$	24	$4\frac{1}{2}$	7	$11\frac{7}{8}$	25	$5\frac{1}{8}$	8	$3\frac{7}{8}$	26	$5\frac{5}{8}$
7	4	23	$4\frac{3}{8}$	7	8	24	$4\frac{7}{8}$	8	0	25	$5\frac{1}{2}$	8	4	26	6
7	$4\frac{1}{8}$	23	$4\frac{3}{4}$	7	$8\frac{1}{8}$	24	$5\frac{3}{8}$	8	$0\frac{1}{8}$	25	$5\frac{7}{8}$	8	$4\frac{1}{8}$	26	$6\frac{1}{2}$
7	$4\frac{1}{4}$	23	$5\frac{1}{8}$	7	$8\frac{1}{4}$	24	$5\frac{3}{4}$	8	$0\frac{1}{4}$	25	$6\frac{1}{4}$	8	$4\frac{1}{4}$	26	$6\frac{7}{8}$
7	$4\frac{3}{8}$	23	$5\frac{1}{2}$	7	$8\frac{3}{8}$	24	$6\frac{1}{8}$	8	$0\frac{3}{8}$	25	$6\frac{5}{8}$	8	$4\frac{3}{8}$	26	$7\frac{1}{4}$
7	$4\frac{1}{2}$	23	6	7	$8\frac{1}{2}$	24	$6\frac{1}{2}$	8	$0\frac{1}{2}$	25	7	8	$4\frac{1}{2}$	26	$7\frac{5}{8}$
7	$4\frac{5}{8}$	23	$6\frac{3}{8}$	7	$8\frac{5}{8}$	24	$6\frac{7}{8}$	8	$0\frac{5}{8}$	25	$7\frac{1}{2}$	8	$4\frac{5}{8}$	26	8
7	$4\frac{3}{4}$	23	$6\frac{3}{4}$	7	$8\frac{3}{4}$	24	$7\frac{1}{4}$	8	$0\frac{3}{4}$	25	$7\frac{7}{8}$	8	$4\frac{3}{4}$	26	$8\frac{3}{8}$
7	$4\frac{7}{8}$	23	$7\frac{1}{8}$	7	$8\frac{7}{8}$	24	$7\frac{5}{8}$	8	$0\frac{7}{8}$	25	$8\frac{1}{4}$	8	$4\frac{7}{8}$	26	$8\frac{7}{8}$
7	5	23	$7\frac{1}{2}$	7	9	24	8	8	1	25	$8\frac{5}{8}$	8	5	26	$9\frac{1}{4}$
7	$5\frac{1}{8}$	23	$7\frac{7}{8}$	7	$9\frac{1}{8}$	24	$8\frac{1}{2}$	8	$1\frac{1}{8}$	25	9	8	$5\frac{1}{8}$	26	$9\frac{5}{8}$
7	$5\frac{1}{4}$	23	$8\frac{1}{4}$	7	$9\frac{1}{4}$	24	$8\frac{7}{8}$	8	$1\frac{1}{4}$	25	$9\frac{1}{2}$	8	$5\frac{1}{4}$	26	10
7	$5\frac{3}{8}$	23	$8\frac{3}{4}$	7	$9\frac{3}{8}$	24	$9\frac{1}{4}$	8	$1\frac{3}{8}$	25	$9\frac{7}{8}$	8	$5\frac{3}{8}$	26	$10\frac{3}{8}$
7	$5\frac{1}{2}$	23	$9\frac{1}{8}$	7	$9\frac{1}{2}$	24	$9\frac{5}{8}$	8	$1\frac{1}{2}$	25	$10\frac{1}{4}$	8	$5\frac{1}{2}$	26	$10\frac{3}{4}$
7	$5\frac{5}{8}$	23	$9\frac{1}{2}$	7	$9\frac{5}{8}$	24	10	8	$1\frac{5}{8}$	25	$10\frac{5}{8}$	8	$5\frac{5}{8}$	26	$11\frac{1}{8}$
7	$5\frac{3}{4}$	23	$9\frac{7}{8}$	7	$9\frac{3}{4}$	24	$10\frac{1}{8}$	8	$1\frac{3}{4}$	25	11	8	$5\frac{3}{4}$	26	$11\frac{1}{2}$
7	$5\frac{7}{8}$	23	$10\frac{1}{4}$	7	$9\frac{7}{8}$	24	$10\frac{7}{8}$	8	$1\frac{7}{8}$	25	$11\frac{3}{8}$	8	$5\frac{7}{8}$	27	0

TABLE V.,

or ANGLE IRON measuring $\frac{1}{4}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
0	9	2	9	1	1	3	$9\frac{1}{2}$	1	5	4	$10\frac{1}{8}$	1	9	5	$10\frac{5}{8}$
0	$9\frac{1}{8}$	2	$9\frac{3}{8}$	1	$1\frac{1}{8}$	3	$9\frac{7}{8}$	1	$5\frac{1}{8}$	4	$10\frac{1}{2}$	1	$9\frac{1}{8}$	5	11
0	$9\frac{1}{4}$	2	$9\frac{3}{4}$	1	$1\frac{1}{4}$	3	$10\frac{3}{8}$	1	$5\frac{1}{4}$	4	$10\frac{7}{8}$	1	$9\frac{1}{4}$	5	$11\frac{1}{2}$
0	$9\frac{3}{8}$	2	$10\frac{1}{8}$	1	$1\frac{3}{8}$	3	$10\frac{3}{4}$	1	$5\frac{3}{8}$	4	$11\frac{1}{4}$	1	$9\frac{3}{8}$	5	$11\frac{7}{8}$
0	$9\frac{1}{2}$	2	$10\frac{1}{2}$	1	$1\frac{1}{2}$	3	$11\frac{1}{8}$	1	$5\frac{1}{2}$	4	$11\frac{5}{8}$	1	$9\frac{1}{2}$	6	$0\frac{1}{4}$
0	$9\frac{5}{8}$	2	$10\frac{7}{8}$	1	$1\frac{5}{8}$	3	$11\frac{1}{2}$	1	$5\frac{5}{8}$	5	0	1	$9\frac{5}{8}$	6	$0\frac{5}{8}$
0	$9\frac{3}{4}$	2	$11\frac{3}{8}$	1	$1\frac{3}{4}$	3	$11\frac{7}{8}$	1	$5\frac{3}{4}$	5	$0\frac{3}{8}$	1	$9\frac{3}{4}$	6	1
0	$9\frac{7}{8}$	2	$11\frac{3}{4}$	1	$1\frac{7}{8}$	4	$0\frac{1}{4}$	1	$5\frac{7}{8}$	5	$0\frac{7}{8}$	1	$9\frac{7}{8}$	6	$1\frac{3}{8}$
0	10	3	$0\frac{1}{8}$	1	2	4	$0\frac{5}{8}$	1	6	5	$1\frac{1}{4}$	1	10	6	$1\frac{3}{4}$
0	$10\frac{1}{8}$	3	$0\frac{1}{2}$	1	$2\frac{1}{8}$	4	1	1	$6\frac{1}{8}$	5	$1\frac{5}{8}$	1	$10\frac{1}{8}$	6	$2\frac{1}{4}$
0	$10\frac{1}{4}$	3	$0\frac{7}{8}$	1	$2\frac{1}{4}$	4	$1\frac{3}{8}$	1	$6\frac{1}{4}$	5	2	1	$10\frac{1}{4}$	6	$2\frac{5}{8}$
0	$10\frac{3}{8}$	3	$1\frac{1}{4}$	1	$2\frac{3}{8}$	4	$1\frac{7}{8}$	1	$6\frac{3}{8}$	5	$2\frac{3}{8}$	1	$10\frac{3}{8}$	6	3
0	$10\frac{1}{2}$	3	$1\frac{5}{8}$	1	$2\frac{1}{2}$	4	$2\frac{1}{4}$	1	$6\frac{1}{2}$	5	$2\frac{3}{4}$	1	$10\frac{1}{2}$	6	$3\frac{3}{8}$
0	$10\frac{5}{8}$	3	2	1	$2\frac{5}{8}$	4	$2\frac{5}{8}$	1	$6\frac{5}{8}$	5	$3\frac{1}{8}$	1	$10\frac{5}{8}$	6	$3\frac{3}{4}$
0	$10\frac{3}{4}$	3	$2\frac{1}{2}$	1	$2\frac{3}{4}$	4	3	1	$6\frac{3}{4}$	5	$3\frac{5}{8}$	1	$10\frac{3}{4}$	6	$4\frac{1}{8}$
0	$10\frac{7}{8}$	3	$2\frac{7}{8}$	1	$2\frac{7}{8}$	4	$3\frac{3}{8}$	1	$6\frac{7}{8}$	5	4	1	$10\frac{7}{8}$	6	$4\frac{1}{2}$
0	11	3	$3\frac{1}{4}$	1	3	4	$3\frac{3}{4}$	1	7	5	$4\frac{3}{8}$	1	11	6	$4\frac{7}{8}$
0	$11\frac{1}{8}$	3	$3\frac{5}{8}$	1	$3\frac{1}{8}$	4	$4\frac{1}{8}$	1	$7\frac{1}{8}$	5	$4\frac{3}{4}$	1	$11\frac{1}{8}$	6	$5\frac{3}{8}$
0	$11\frac{1}{4}$	3	4	1	$3\frac{1}{4}$	4	$4\frac{1}{2}$	1	$7\frac{1}{4}$	5	$5\frac{1}{8}$	1	$11\frac{1}{4}$	6	$5\frac{3}{4}$
0	$11\frac{3}{8}$	3	$4\frac{3}{8}$	1	$3\frac{3}{8}$	4	5	1	$7\frac{3}{8}$	5	$5\frac{1}{2}$	1	$11\frac{3}{8}$	6	$6\frac{1}{8}$
0	$11\frac{1}{2}$	3	$4\frac{7}{8}$	1	$3\frac{1}{2}$	4	$5\frac{3}{8}$	1	$7\frac{1}{2}$	5	$5\frac{7}{8}$	1	$11\frac{1}{2}$	6	$6\frac{1}{2}$
0	$11\frac{5}{8}$	3	$5\frac{1}{4}$	1	$3\frac{5}{8}$	4	$5\frac{3}{4}$	1	$7\frac{5}{8}$	5	$6\frac{3}{8}$	1	$11\frac{5}{8}$	6	$6\frac{7}{8}$
0	$11\frac{3}{4}$	3	$5\frac{5}{8}$	1	$3\frac{3}{4}$	4	$6\frac{1}{8}$	1	$7\frac{3}{4}$	5	$6\frac{3}{4}$	1	$11\frac{3}{4}$	6	$7\frac{1}{4}$
0	$11\frac{7}{8}$	3	6	1	$3\frac{7}{8}$	4	$6\frac{1}{2}$	1	$7\frac{7}{8}$	5	$7\frac{1}{8}$	1	$11\frac{7}{8}$	6	$7\frac{5}{8}$
1	0	3	$6\frac{3}{8}$	1	4	4	7	1	8	5	$7\frac{1}{2}$	2	0	6	$8\frac{1}{8}$
1	$0\frac{1}{8}$	3	$6\frac{3}{4}$	1	$4\frac{1}{8}$	4	$7\frac{3}{8}$	1	$8\frac{1}{8}$	5	8	2	$0\frac{1}{8}$	6	$8\frac{1}{2}$
1	$0\frac{1}{4}$	3	$7\frac{1}{8}$	1	$4\frac{1}{4}$	4	$7\frac{3}{4}$	1	$8\frac{1}{4}$	5	$8\frac{3}{8}$	2	$0\frac{1}{4}$	6	$8\frac{7}{8}$
1	$0\frac{3}{8}$	3	$7\frac{5}{8}$	1	$4\frac{3}{8}$	4	$8\frac{1}{8}$	1	$8\frac{3}{8}$	5	$8\frac{3}{4}$	2	$0\frac{3}{8}$	6	$9\frac{1}{4}$
1	$0\frac{1}{2}$	3	8	1	$4\frac{1}{2}$	4	$8\frac{1}{2}$	1	$8\frac{1}{2}$	5	$9\frac{1}{8}$	2	$0\frac{1}{2}$	6	$9\frac{5}{8}$
1	$0\frac{5}{8}$	3	$8\frac{3}{8}$	1	$4\frac{5}{8}$	4	$8\frac{7}{8}$	1	$8\frac{5}{8}$	5	$9\frac{1}{2}$	2	$0\frac{5}{8}$	6	10
1	$0\frac{3}{4}$	3	$8\frac{3}{4}$	1	$4\frac{3}{4}$	4	$9\frac{1}{4}$	1	$8\frac{3}{4}$	5	$9\frac{7}{8}$	2	$0\frac{3}{4}$	6	$10\frac{1}{2}$
1	$0\frac{7}{8}$	3	$9\frac{1}{8}$	1	$4\frac{7}{8}$	4	$9\frac{5}{8}$	1	$8\frac{7}{8}$	5	$10\frac{1}{4}$	2	$0\frac{7}{8}$	6	$10\frac{7}{8}$

For Angle Iron measuring $\frac{1}{4}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
2	1	6	11 1/4	2	5	7	11 3/4	2	9	9	0 3/8	3	1	10	0 3/8
2	1 1/8	6	11 3/8	2	5 1/8	8	0 1/8	2	9 1/8	9	0 3/4	3	1 1/8	10	1 1/8
2	1 1/4	7	0	2	5 1/4	8	0 1/2	2	9 1/4	9	1 1/8	3	1 1/4	10	1 3/4
2	1 3/8	7	0 3/8	2	5 3/8	8	1	2	9 3/8	9	1 1/2	3	1 3/8	10	2 1/8
2	1 1/2	7	0 3/4	2	5 1/2	8	1 3/8	2	9 1/2	9	1 7/8	3	1 1/2	10	2 1/2
2	1 5/8	7	1 1/8	2	5 5/8	8	1 3/4	2	9 5/8	9	2 3/8	3	1 5/8	10	2 7/8
2	1 3/4	7	1 1/2	2	5 3/4	8	2 1/8	2	9 3/4	9	2 3/4	3	1 3/4	10	3 1/4
2	1 7/8	7	2	2	5 7/8	8	2 1/2	2	9 7/8	9	3 1/8	3	1 7/8	10	3 5/8
2	2	7	2 3/8	2	6	8	2 7/8	2	10	9	3 1/2	3	2	10	4
2	2 1/8	7	2 3/4	2	6 1/8	8	3 3/8	2	10 1/8	9	3 7/8	3	2 1/8	10	4 3/8
2	2 1/4	7	3 1/8	2	6 1/4	8	3 3/4	2	10 1/4	9	4 1/4	3	2 1/4	10	4 7/8
2	2 3/8	7	3 1/2	2	6 3/8	8	4 1/8	2	10 3/8	9	4 5/8	3	2 3/8	10	5 1/4
2	2 1/2	7	3 7/8	2	6 1/2	8	4 1/2	2	10 1/2	9	5	3	2 1/2	10	5 5/8
2	2 5/8	7	4 3/8	2	6 5/8	8	4 7/8	2	10 5/8	9	5 1/2	3	2 5/8	10	6
2	2 3/4	7	4 3/4	2	6 3/4	8	5 1/4	2	10 3/4	9	5 7/8	3	2 3/4	10	6 3/8
2	2 7/8	7	5 1/8	2	6 7/8	8	5 5/8	2	10 7/8	9	6 1/4	3	2 7/8	10	6 7/8
2	3	7	5 1/2	2	7	8	6	2	11	9	6 5/8	3	3	10	7 1/4
2	3 1/8	7	5 7/8	2	7 1/8	8	6 1/2	2	11 1/8	9	7	3	3 1/8	10	7 5/8
2	3 1/4	7	6 1/4	2	7 1/4	8	6 7/8	2	11 1/4	9	7 3/8	3	3 1/4	10	8
2	3 3/8	7	6 5/8	2	7 3/8	8	7 1/4	2	11 3/8	9	7 7/8	3	3 3/8	10	8 3/8
2	3 1/2	7	7	2	7 1/2	8	7 5/8	2	11 1/2	9	8 1/4	3	3 1/2	10	8 3/4
2	3 5/8	7	7 1/2	2	7 5/8	8	8	2	11 5/8	9	8 5/8	3	3 5/8	10	9 1/8
2	3 3/4	7	7 7/8	2	7 3/4	8	8 3/8	2	11 3/4	9	9	3	3 3/4	10	9 1/2
2	3 7/8	7	8 1/4	2	7 7/8	8	8 7/8	2	11 7/8	9	9 3/8	3	3 7/8	10	9 7/8
2	4	7	8 5/8	2	8	8	9 1/4	3	0	9	9 3/4	3	4	10	10 1/4
2	4 1/8	7	9	2	8 1/8	8	9 5/8	3	0 1/8	9	10 1/8	3	4 1/8	10	10 3/4
2	4 1/4	7	9 3/8	2	8 1/4	8	10	3	0 1/4	9	10 1/2	3	4 1/4	10	11 1/8
2	4 3/8	7	9 3/4	2	8 3/8	8	10 3/8	3	0 3/8	9	10 7/8	3	4 3/8	10	11 5/8
2	4 1/2	7	10 1/4	2	8 1/2	8	10 3/4	3	0 1/2	9	11 3/8	3	4 1/2	10	11 7/8
2	4 5/8	7	10 5/8	2	8 5/8	8	11 1/8	3	0 5/8	9	11 3/4	3	4 5/8	11	0 3/8
2	4 3/4	7	11	2	8 3/4	8	11 1/2	3	0 3/4	10	0 1/8	3	4 3/4	11	0 7/8
2	4 7/8	7	11 3/8	2	8 7/8	9	0	3	0 7/8	10	0 1/2	3	4 7/8	11	1 1/8

For Angle Iron measuring ¼ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
5	10	18	7	6	2	19	7 5/8	6	6	20	8 1/8	6	10	21	8 3/4
5	10 1/8	18	7 3/8	6	2 1/8	19	8	6	6 1/8	20	8 1/2	6	10 1/8	21	9 1/8
5	10 1/4	18	7 7/8	6	2 1/4	19	8 3/8	6	6 1/4	20	9	6	10 1/4	21	9 1/2
5	10 3/8	18	8 1/4	6	2 3/8	19	8 3/4	6	6 3/8	20	9 3/8	6	10 3/8	21	9 7/8
5	10 1/2	18	8 5/8	6	2 1/2	19	9 1/8	6	6 1/2	20	9 3/4	6	10 1/2	21	10 3/8
5	10 5/8	18	9	6	2 5/8	19	9 5/8	6	6 5/8	20	10 1/8	6	10 5/8	21	10 3/4
5	10 3/4	18	9 3/8	6	2 3/4	19	10	6	6 3/4	20	10 1/2	6	10 3/4	21	11 1/8
5	10 7/8	18	9 3/4	6	2 7/8	19	10 3/8	6	6 7/8	20	10 7/8	6	10 7/8	21	11 1/2
5	11	18	10 1/8	6	3	19	10 3/4	6	7	20	11 3/8	6	11	21	11 7/8
5	11 1/8	18	10 1/2	6	3 1/8	19	11 1/8	6	7 1/8	20	11 3/4	6	11 1/8	22	0 1/4
5	11 1/4	18	11	6	3 1/4	19	11 1/2	6	7 1/4	21	0 1/8	6	11 1/4	22	0 5/8
5	11 3/8	18	11 3/8	6	3 3/8	19	11 7/8	6	7 3/8	21	0 1/2	6	11 3/8	22	1
5	11 1/2	18	11 3/4	6	3 1/2	20	0 3/8	6	7 1/2	21	0 7/8	6	11 1/2	22	1 1/8
5	11 5/8	19	0 1/8	6	3 5/8	20	0 3/4	6	7 5/8	21	1 1/4	6	11 5/8	22	1 7/8
5	11 3/4	19	0 1/2	6	3 3/4	20	1 1/8	6	7 3/4	21	1 5/8	6	11 3/4	22	2 1/4
5	11 7/8	19	0 7/8	6	3 7/8	20	1 1/2	6	7 7/8	21	2	6	11 7/8	22	2 5/8
6	0	19	1 3/8	6	4	20	1 7/8	6	8	21	2 1/2	7	0	22	3
6	0 1/8	19	1 3/4	6	4 1/8	20	2 1/4	6	8 1/8	21	2 7/8	7	0 1/8	22	3 3/8
6	0 1/4	19	2 1/8	6	4 1/4	20	2 5/8	6	8 1/4	21	3 1/4	7	0 1/4	22	3 7/8
6	0 3/8	19	2 1/2	6	4 3/8	20	3	6	8 3/8	21	3 5/8	7	0 3/8	22	4 1/4
6	0 1/2	19	2 7/8	6	4 1/2	20	3 1/2	6	8 1/2	21	4	7	0 1/2	22	4 5/8
6	0 5/8	19	3 1/4	6	4 5/8	20	3 7/8	6	8 5/8	21	4 3/8	7	0 5/8	22	5
6	0 3/4	19	3 5/8	6	4 3/4	20	4 1/4	6	8 3/4	21	4 3/4	7	0 3/4	22	5 3/8
6	0 7/8	19	4	6	4 7/8	20	4 5/8	6	8 7/8	21	5 1/8	7	0 7/8	22	5 3/4
6	1	19	4 1/2	6	5	20	5	6	9	21	5 1/2	7	1	22	6 1/8
6	1 1/8	19	4 7/8	6	5 1/8	20	5 3/8	6	9 1/8	21	6	7	1 1/8	22	6 1/2
6	1 1/4	19	5 1/4	6	5 1/4	20	5 7/8	6	9 1/4	21	6 3/8	7	1 1/4	22	7
6	1 3/8	19	5 5/8	6	5 3/8	20	6 1/8	6	9 3/8	21	6 3/4	7	1 3/8	22	7 3/8
6	1 1/2	19	6	6	5 1/2	20	6 5/8	6	9 1/2	21	7 1/8	7	1 1/2	22	7 3/4
6	1 5/8	19	6 3/8	6	5 5/8	20	7	6	9 5/8	21	7 5/8	7	1 5/8	22	8 1/8
6	1 3/4	19	6 7/8	6	5 3/4	20	7 3/8	6	9 3/4	21	8	7	1 3/4	22	8 1/2
6	1 7/8	19	7 1/4	6	5 7/8	20	7 3/4	6	9 7/8	21	8 3/8	7	1 7/8	22	8 7/8

For ANGLE IRON measuring ¼ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
4	9	15	3¾	5	1	16	4⅜	5	5	17	4⅞	5	9	18	5½
4	9⅛	15	4⅛	5	1⅛	16	4¾	5	5⅛	17	5¼	5	9⅛	18	5⅞
4	9¼	15	4½	5	1¼	16	5⅛	5	5¼	17	5⅝	5	9¼	18	6¼
4	9⅜	15	4⅞	5	1⅜	16	5½	5	5⅜	17	6	5	9⅜	18	6⅝
4	9½	15	5⅜	5	1½	16	5⅞	5	5½	17	6⅛	5	9½	18	7
4	9⅝	15	5¾	5	1⅝	16	6¼	5	5⅝	17	6⅝	5	9⅝	18	7⅜
4	9¾	15	6⅛	5	1¾	16	6⅝	5	5¾	17	7¼	5	9¾	18	7⅞
4	9⅞	15	6½	5	1⅞	16	7	5	5⅞	17	7⅝	5	9⅞	18	8¼
4	10	15	6⅞	5	2	16	7½	5	6	17	8	5	10	18	8⅝
4	10⅛	15	7¼	5	2⅛	16	7⅞	5	6⅛	17	8⅜	5	10⅛	18	9
4	10¼	15	7¾	5	2¼	16	8¼	5	6¼	17	8⅞	5	10¼	18	9⅜
4	10⅜	15	8⅛	5	2⅜	16	8⅝	5	6⅜	17	9¼	5	10⅜	18	9¾
4	10½	15	8½	5	2½	16	9	5	6½	17	9⅝	5	10½	18	10⅛
4	10⅝	15	8⅞	5	2⅝	16	9⅜	5	6⅝	17	10	5	10⅝	18	10½
4	10¾	15	9¼	5	2¾	16	9⅞	5	6¾	17	10⅜	5	10¾	18	11
4	10⅞	15	9⅝	5	2⅞	16	10¼	5	6⅞	17	10¾	5	10⅞	18	11⅜
4	11	15	10	5	3	16	10⅝	5	7	17	11⅛	5	11	18	11¾
4	11⅛	15	10⅜	5	3⅛	16	11	5	7⅛	17	11½	5	11⅛	19	0⅛
4	11¼	15	10⅞	5	3¼	16	11⅜	5	7¼	18	0	5	11¼	19	0½
4	11⅜	15	11¼	5	3⅜	16	11¾	5	7⅜	18	0⅜	5	11⅜	19	0⅞
4	11½	15	11⅝	5	3½	17	0⅛	5	7½	18	0¾	5	11½	19	1⅜
4	11⅝	16	0	5	3⅝	17	0⅝	5	7⅝	18	1⅛	5	11⅝	19	1¾
4	11¾	16	0⅜	5	3¾	17	1	5	7¾	18	1½	5	11¾	19	2⅛
4	11⅞	16	0¾	5	3⅞	17	1⅜	5	7⅞	18	1⅞	5	11⅞	19	2½
5	0	16	1⅛	5	4	17	1¾	5	8	18	2⅛	6	0	19	2⅞
5	0⅛	16	1⅝	5	4⅛	17	2⅛	5	8⅛	18	2¾	6	0⅛	19	3¼
5	0¼	16	2	5	4¼	17	2½	5	8¼	18	3⅛	6	0¼	19	3⅝
5	0⅜	16	2⅜	5	4⅜	17	2⅞	5	8⅜	18	3½	6	0⅜	19	4
5	0½	16	2¾	5	4½	17	3⅜	5	8½	18	3⅞	6	0½	19	4⅛
5	0⅝	16	3⅛	5	4⅝	17	3¾	5	8⅝	18	4¼	6	0⅝	19	4⅞
5	0¾	16	3½	5	4¾	17	4⅛	5	8¾	18	4⅝	6	0¾	19	5¼
5	0⅞	16	3⅞	5	4⅞	17	4½	5	8⅞	18	5	6	0⅞	19	5⅝

'or ANGLE IRON measuring $\frac{1}{4}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
6	1	19	6	6	5	20	6 5/8	6	9	21	7 1/8	7	1	22	7 3/4
6	1 1/8	19	6 3/8	6	5 1/8	20	7	6	9 1/8	21	7 1/8	7	1 1/8	22	8 1/8
6	1 1/4	19	6 7/8	6	5 1/4	20	7 3/8	6	9 1/4	21	8	7	1 1/4	22	8 1/4
6	1 3/8	19	7 1/4	6	5 3/8	20	7 3/4	6	9 3/8	21	8 3/8	7	1 3/8	22	8 7/8
6	1 1/2	19	7 5/8	6	5 1/2	20	8 1/8	6	9 1/2	21	8 3/4	7	1 1/2	22	9 1/4
6	1 5/8	19	8	6	5 5/8	20	8 1/2	6	9 5/8	21	9 1/8	7	1 5/8	22	9 3/4
6	1 3/4	19	8 3/8	6	5 3/4	20	9	6	9 3/4	21	9 1/2	7	1 3/4	22	10 1/8
6	1 7/8	19	8 3/4	6	5 7/8	20	9 3/8	6	9 7/8	21	9 7/8	7	1 7/8	22	10 1/2
6	2	19	9 1/8	6	6	20	9 3/4	6	10	21	10 3/8	7	2	22	10 7/8
6	2 1/8	19	9 5/8	6	6 1/8	20	10 1/8	6	10 1/8	21	10 3/4	7	2 1/8	22	11 1/4
6	2 1/4	19	10	6	6 1/4	20	10 1/2	6	10 1/4	21	11 1/8	7	2 1/4	22	11 5/8
6	2 3/8	19	10 3/8	6	6 3/8	20	10 7/8	6	10 3/8	21	11 1/2	7	2 3/8	23	0
6	2 1/2	19	10 3/4	6	6 1/2	20	11 3/8	6	10 1/2	21	11 7/8	7	2 1/2	23	0 1/8
6	2 5/8	19	11 1/8	6	6 5/8	20	11 3/4	6	10 5/8	22	0 1/4	7	2 5/8	23	0 7/8
6	2 3/4	19	11 1/2	6	6 3/4	21	0 1/8	6	10 3/4	22	0 5/8	7	2 3/4	23	1 1/4
6	2 7/8	19	11 7/8	6	6 7/8	21	0 1/2	6	10 7/8	22	1	7	2 7/8	23	1 5/8
6	3	20	0 3/8	6	7	21	0 7/8	6	11	22	1 1/2	7	3	23	2
6	3 1/8	20	0 3/4	6	7 1/8	21	1 1/4	6	11 1/8	22	1 7/8	7	3 1/8	23	2 3/8
6	3 1/4	20	1 1/8	6	7 1/4	21	1 5/8	6	11 1/4	22	2 1/4	7	3 1/4	23	2 3/4
6	3 3/8	20	1 1/2	6	7 3/8	21	2	6	11 3/8	22	2 5/8	7	3 3/8	23	3 1/4
6	3 1/2	20	1 7/8	6	7 1/2	21	2 1/2	6	11 1/2	22	3	7	3 1/2	23	3 5/8
6	3 5/8	20	2 1/4	6	7 5/8	21	2 7/8	6	11 5/8	22	3 3/8	7	3 5/8	23	4
6	3 3/4	20	2 5/8	6	7 3/4	21	3 1/4	6	11 3/4	22	3 7/8	7	3 3/4	23	4 3/8
6	3 7/8	20	3	6	7 7/8	21	3 5/8	6	11 7/8	22	4 1/4	7	3 7/8	23	4 3/4
6	4	20	3 1/2	6	8	21	4	7	0	22	4 5/8	7	4	23	5 1/8
6	4 1/8	20	3 7/8	6	8 1/8	21	4 3/8	7	0 1/8	22	5	7	4 1/8	23	5 1/4
6	4 1/4	20	4 1/4	6	8 1/4	21	4 3/4	7	0 1/4	22	5 3/8	7	4 1/4	23	6
6	4 3/8	20	4 5/8	6	8 3/8	21	5 1/8	7	0 3/8	22	5 3/4	7	4 3/8	23	6 3/8
6	4 1/2	20	5	6	8 1/2	21	5 1/2	7	0 1/2	22	6 1/8	7	4 1/2	23	6 3/4
6	4 5/8	20	5 3/8	6	8 5/8	21	6	7	0 5/8	22	6 1/2	7	4 5/8	23	7 1/8
6	4 3/4	20	5 7/8	6	8 3/4	21	6 3/8	7	0 3/4	22	7	7	4 3/4	23	7 1/2
6	4 7/8	20	6 1/4	6	8 7/8	21	6 3/4	7	0 7/8	22	7 3/8	7	4 7/8	23	7 7/8

[illegible] across the root.

[illegible]

[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	10	9	2¾
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	10⅛	9	3⅛
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	10¼	9	3½
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	10⅜	9	3⅞
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	10½	9	4¼
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	10⅝	9	4⅝
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	10¾	9	5
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	10⅞	9	5½
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	11	9	5⅞
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	11⅛	9	6¼
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6	2	11¼	9	6⅝
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	11⅜	9	7
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	11½	9	7⅜
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	11⅝	9	7⅞
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	11¾	9	8¼
1	11[illegible]	6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	11⅞	9	8⅝
2	[illegible]	6	[illegible]	2	[illegible]	[illegible]	[illegible]	2	[illegible]	[illegible]	[illegible]	3	0	9	9
2	[illegible]	6	[illegible]	2	[illegible]	[illegible]	[illegible]	2	[illegible]	[illegible]	[illegible]	3	0⅛	9	9⅜
2	[illegible]	6	[illegible]	2	[illegible]	[illegible]	[illegible]	2	[illegible]	[illegible]	[illegible]	3	0¼	9	9¾
2	[illegible]	6	[illegible]	2	[illegible]	[illegible]	[illegible]	2	[illegible]	[illegible]	[illegible]	3	0⅜	9	10⅛
2	[illegible]	6	[illegible]	2	[illegible]	[illegible]	[illegible]	2	[illegible]	8	10	3	0½	9	10½
2	[illegible]	6	[illegible]	2	[illegible]	[illegible]	[illegible]	2	[illegible]	8	[illegible]	3	0⅝	9	10⅞
2	0¾	6	[illegible]	2	[illegible]	7	[illegible]	2	[illegible]	8	[illegible]	3	0¾	9	11⅜
2	0⅞	6	10	2	[illegible]	7	[illegible]	2	[illegible]	8	[illegible]	3	0⅞	9	11¾
2	1	6	10½	2	5	7	11	2	9	8	11⅝	3	1	10	0⅛
2	1⅛	6	10⅞	2	5⅛	7	11⅜	2	9⅛	9	0	3	1⅛	10	0½
2	1¼	6	11¼	2	5¼	7	11¾	2	9¼	9	0⅜	3	1¼	10	0⅞
2	1⅜	6	11⅝	2	5⅜	8	0⅛	2	9⅜	9	0¾	3	1⅜	10	1⅜
2	1½	7	0	2	5½	8	0½	2	9½	9	1⅛	3	1½	10	1¾
2	1⅝	7	0⅜	2	5⅝	8	1	2	9⅝	9	1½	3	1⅝	10	2⅛
2	1¾	7	0¾	2	5¾	8	1⅜	2	9¾	9	1⅞	3	1¾	10	2½
2	1⅞	7	1⅛	2	5⅞	8	1¾	2	9⅞	9	2⅜	3	1⅞	10	2⅞

For ANGLE IRON measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
3	2	10	$3\frac{1}{4}$	3	6	11	$3\frac{7}{8}$	3	10	12	$4\frac{3}{8}$	4	2	13	5
3	$2\frac{1}{8}$	10	$3\frac{5}{8}$	3	$6\frac{1}{8}$	11	$4\frac{1}{4}$	3	$10\frac{1}{8}$	12	$4\frac{3}{4}$	4	$2\frac{1}{8}$	13	$5\frac{3}{8}$
3	$2\frac{1}{4}$	10	4	3	$6\frac{1}{4}$	11	$4\frac{5}{8}$	3	$10\frac{1}{4}$	12	$5\frac{1}{4}$	4	$2\frac{1}{4}$	13	$5\frac{3}{4}$
3	$2\frac{3}{8}$	10	$4\frac{1}{8}$	3	$6\frac{3}{8}$	11	5	3	$10\frac{3}{8}$	12	$5\frac{5}{8}$	4	$2\frac{3}{8}$	13	$6\frac{1}{8}$
3	$2\frac{1}{2}$	10	$4\frac{3}{8}$	3	$6\frac{1}{2}$	11	$5\frac{3}{8}$	3	$10\frac{1}{2}$	12	6	4	$2\frac{1}{2}$	13	$6\frac{1}{4}$
3	$2\frac{5}{8}$	10	$5\frac{1}{4}$	3	$6\frac{5}{8}$	11	$5\frac{3}{4}$	3	$10\frac{5}{8}$	12	$6\frac{3}{8}$	4	$2\frac{5}{8}$	13	7
3	$2\frac{3}{4}$	10	$5\frac{5}{8}$	3	$6\frac{3}{4}$	11	$6\frac{1}{4}$	3	$10\frac{3}{4}$	12	$6\frac{3}{4}$	4	$2\frac{3}{4}$	13	$7\frac{3}{8}$
3	$2\frac{7}{8}$	10	6	3	$6\frac{7}{8}$	11	$6\frac{5}{8}$	3	$10\frac{7}{8}$	12	$7\frac{1}{8}$	4	$2\frac{7}{8}$	13	$7\frac{3}{4}$
3	3	10	$6\frac{3}{8}$	3	7	11	7	3	11	12	$7\frac{1}{2}$	4	3	13	$8\frac{1}{8}$
3	$3\frac{1}{8}$	10	$6\frac{7}{8}$	3	$7\frac{1}{8}$	11	$7\frac{3}{8}$	3	$11\frac{1}{8}$	12	$7\frac{7}{8}$	4	$3\frac{1}{8}$	13	$8\frac{1}{4}$
3	$3\frac{1}{4}$	10	$7\frac{1}{4}$	3	$7\frac{1}{4}$	11	$7\frac{3}{4}$	3	$11\frac{1}{4}$	12	$8\frac{3}{8}$	4	$3\frac{1}{4}$	13	$8\frac{7}{8}$
3	$3\frac{3}{8}$	10	$7\frac{5}{8}$	3	$7\frac{3}{8}$	11	$8\frac{1}{8}$	3	$11\frac{3}{8}$	12	$8\frac{3}{4}$	4	$3\frac{3}{8}$	13	$9\frac{1}{4}$
3	$3\frac{1}{2}$	10	8	3	$7\frac{1}{2}$	11	$8\frac{1}{2}$	3	$11\frac{1}{2}$	12	$9\frac{1}{8}$	4	$3\frac{1}{2}$	13	$9\frac{5}{8}$
3	$3\frac{5}{8}$	10	$8\frac{3}{8}$	3	$7\frac{5}{8}$	11	$8\frac{7}{8}$	3	$11\frac{3}{8}$	12	$9\frac{1}{2}$	4	$3\frac{5}{8}$	13	$10\frac{1}{8}$
3	$3\frac{3}{4}$	10	$8\frac{3}{4}$	3	$7\frac{3}{4}$	11	$9\frac{3}{8}$	3	$11\frac{3}{4}$	12	$9\frac{7}{8}$	4	$3\frac{3}{4}$	13	$10\frac{1}{2}$
3	$3\frac{7}{8}$	10	$9\frac{1}{8}$	3	$7\frac{7}{8}$	11	$9\frac{3}{4}$	3	$11\frac{7}{8}$	12	$10\frac{3}{8}$	4	$3\frac{7}{8}$	13	$10\frac{7}{8}$
3	4	10	$9\frac{1}{2}$	3	8	11	$10\frac{1}{8}$	4	0	12	$10\frac{3}{4}$	4	4	13	$11\frac{1}{4}$
3	$4\frac{1}{8}$	10	$9\frac{7}{8}$	3	$8\frac{1}{8}$	11	$10\frac{1}{2}$	4	$0\frac{1}{8}$	12	$11\frac{1}{8}$	4	$4\frac{1}{8}$	13	$11\frac{5}{8}$
3	$4\frac{1}{4}$	10	$10\frac{3}{8}$	3	$8\frac{1}{4}$	11	$10\frac{7}{8}$	4	$0\frac{1}{4}$	12	$11\frac{1}{2}$	4	$4\frac{1}{4}$	14	0
3	$4\frac{3}{8}$	10	$10\frac{3}{4}$	3	$8\frac{3}{8}$	11	$11\frac{1}{4}$	4	$0\frac{3}{8}$	12	$11\frac{7}{8}$	4	$4\frac{3}{8}$	14	$0\frac{3}{8}$
3	$4\frac{1}{2}$	10	$11\frac{1}{8}$	3	$8\frac{1}{2}$	11	$11\frac{5}{8}$	4	$0\frac{1}{2}$	13	$0\frac{1}{4}$	4	$4\frac{1}{2}$	14	$0\frac{7}{8}$
3	$4\frac{5}{8}$	10	$11\frac{1}{2}$	3	$8\frac{5}{8}$	12	$0\frac{1}{8}$	4	$0\frac{5}{8}$	13	$0\frac{5}{8}$	4	$4\frac{5}{8}$	14	$1\frac{1}{4}$
3	$4\frac{3}{4}$	10	$11\frac{7}{8}$	3	$8\frac{3}{4}$	12	$0\frac{1}{2}$	4	$0\frac{3}{4}$	13	1	4	$4\frac{3}{4}$	14	$1\frac{5}{8}$
3	$4\frac{7}{8}$	11	$0\frac{3}{8}$	3	$8\frac{7}{8}$	12	$0\frac{7}{8}$	4	$0\frac{7}{8}$	13	$1\frac{1}{2}$	4	$4\frac{7}{8}$	14	2
3	5	11	$0\frac{3}{4}$	3	9	12	$1\frac{1}{4}$	4	1	13	$1\frac{7}{8}$	4	5	14	$2\frac{3}{8}$
3	$5\frac{1}{8}$	11	$1\frac{1}{8}$	3	$9\frac{1}{8}$	12	$1\frac{5}{8}$	4	$1\frac{1}{8}$	13	$2\frac{1}{4}$	4	$5\frac{1}{8}$	14	$2\frac{3}{4}$
3	$5\frac{1}{4}$	11	$1\frac{1}{2}$	3	$9\frac{1}{4}$	12	2	4	$1\frac{1}{4}$	13	$2\frac{5}{8}$	4	$5\frac{1}{4}$	14	$3\frac{1}{8}$
3	$5\frac{3}{8}$	11	$1\frac{7}{8}$	3	$9\frac{3}{8}$	12	$2\frac{3}{8}$	4	$1\frac{3}{8}$	13	3	4	$5\frac{3}{8}$	14	$3\frac{1}{2}$
3	$5\frac{1}{2}$	11	$2\frac{1}{4}$	3	$9\frac{1}{2}$	12	$2\frac{7}{8}$	4	$1\frac{1}{2}$	13	$3\frac{3}{8}$	4	$5\frac{1}{2}$	14	4
3	$5\frac{5}{8}$	11	$2\frac{5}{8}$	3	$9\frac{5}{8}$	12	$3\frac{1}{4}$	4	$1\frac{5}{8}$	13	$3\frac{3}{4}$	4	$5\frac{5}{8}$	14	$4\frac{3}{8}$
3	$5\frac{3}{4}$	11	3	3	$9\frac{3}{4}$	12	$3\frac{5}{8}$	4	$1\frac{3}{4}$	13	$4\frac{1}{4}$	4	$5\frac{3}{4}$	14	$4\frac{3}{4}$
3	$5\frac{7}{8}$	11	$3\frac{1}{2}$	3	$9\frac{7}{8}$	12	4	4	$1\frac{7}{8}$	13	$4\frac{5}{8}$	4	$5\frac{7}{8}$	14	$5\frac{1}{8}$

For Angle Iron measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
4	6	14	5 1/2	4	10	15	6 1/8	5	2	16	6 3/8	5	6	17	7 1/4
4	6 1/8	14	5 7/8	4	10 1/8	15	6 1/2	5	2 1/8	16	7	5	6 1/8	17	7 3/8
4	6 1/4	14	6 3/8	4	10 1/4	15	6 7/8	5	2 1/4	16	7 1/4	5	6 1/4	17	8
4	6 3/8	14	6 3/4	4	10 3/8	15	7 1/4	5	2 3/8	16	7 7/8	5	6 3/8	17	8 3/8
4	6 1/2	14	7 1/8	4	10 1/2	15	7 3/4	5	2 1/2	16	8 1/4	5	6 1/2	17	8 7/8
4	6 5/8	14	7 1/2	4	10 5/8	15	8 1/8	5	2 5/8	16	8 5/8	5	6 5/8	17	9 1/4
4	6 3/4	14	7 7/8	4	10 3/4	15	8 1/2	5	2 3/4	16	9	5	6 3/4	17	9 5/8
4	6 7/8	14	8 1/4	4	10 7/8	15	8 7/8	5	2 7/8	16	9 3/8	5	6 7/8	17	10
4	7	14	8 3/4	4	11	15	9 1/4	5	3	16	9 7/8	5	7	17	10 3/8
4	7 1/8	14	9 1/8	4	11 1/8	15	9 5/8	5	3 1/8	16	10 1/4	5	7 1/8	17	10 3/4
4	7 1/4	14	9 1/2	4	11 1/4	15	10	5	3 1/4	16	10 5/8	5	7 1/4	17	11 1/8
4	7 3/8	14	9 7/8	4	11 3/8	15	10 3/8	5	3 3/8	16	11	5	7 3/8	17	11 1/2
4	7 1/2	14	10 1/4	4	11 1/2	15	10 7/8	5	3 1/2	16	11 3/8	5	7 1/2	18	0
4	7 5/8	14	10 5/8	4	11 5/8	15	11 1/4	5	3 5/8	16	11 3/4	5	7 5/8	18	0 3/8
4	7 3/4	14	11	4	11 3/4	15	11 5/8	5	3 3/4	17	0 1/8	5	7 3/4	18	0 3/4
4	7 7/8	14	11 1/2	4	11 7/8	16	0	5	3 7/8	17	0 3/8	5	7 7/8	18	1 1/8
4	8	14	11 7/8	5	0	16	0 3/8	5	4	17	1	5	8	18	1 1/2
4	8 1/8	15	0 1/4	5	0 1/8	16	0 3/4	5	4 1/8	17	1 3/8	5	8 1/8	18	1 7/8
4	8 1/4	15	0 5/8	5	0 1/4	16	1 1/8	5	4 1/4	17	1 3/4	5	8 1/4	18	2 3/8
4	8 3/8	15	1	5	0 3/8	16	1 5/8	5	4 3/8	17	2 1/8	5	8 3/8	18	2 3/4
4	8 1/2	15	1 3/8	5	0 1/2	16	2	5	4 1/2	17	2 1/2	5	8 1/2	18	3 1/8
4	8 5/8	15	1 7/8	5	0 5/8	16	2 3/8	5	4 5/8	17	2 7/8	5	8 5/8	18	3 1/2
4	8 3/4	15	2 1/4	5	0 3/4	16	2 7/8	5	4 3/4	17	3 3/8	5	8 3/4	18	3 7/8
4	8 7/8	15	2 5/8	5	0 7/8	16	3 1/8	5	4 7/8	17	3 3/4	5	8 7/8	18	4 1/4
4	9	15	3	5	1	16	3 1/2	5	5	17	4 1/8	5	9	18	4 5/8
4	9 1/8	15	3 3/8	5	1 1/8	16	3 7/8	5	5 1/8	17	4 1/2	5	9 1/8	18	5
4	9 1/4	15	3 3/4	5	1 1/4	16	4 3/8	5	5 1/4	17	4 7/8	5	9 1/4	18	5 1/2
4	9 3/8	15	4 1/8	5	1 3/8	16	4 3/4	5	5 3/8	17	5 1/4	5	9 3/8	18	5 7/8
4	9 1/2	15	4 1/2	5	1 1/2	16	5 1/8	5	5 1/2	17	5 5/8	5	9 1/2	18	6 1/4
4	9 5/8	15	4 7/8	5	1 5/8	16	5 1/2	5	5 5/8	17	6	5	9 5/8	18	6 5/8
4	9 3/4	15	5 3/8	5	1 3/4	16	5 7/8	5	5 3/4	17	6 1/2	5	9 3/4	18	7
4	9 7/8	15	5 3/4	5	1 7/8	16	6 1/4	5	5 7/8	17	6 7/8	5	9 7/8	18	7 3/8

For ANGLE IRON measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
5	10	18	7 7/8	6	2	19	8 3/8	6	6	20	9	6	10	21	9 1/2
5	10 1/8	18	8 1/4	6	2 1/8	19	8 3/4	6	6 1/8	20	9 3/8	6	10 1/8	21	9 7/8
5	10 1/4	18	8 5/8	6	2 1/4	19	9 1/8	6	6 1/4	20	9 3/4	6	10 1/4	21	10 3/8
5	10 3/8	18	9	6	2 3/8	19	9 5/8	6	6 3/8	20	10 1/8	6	10 3/8	21	10 3/4
5	10 1/2	18	9 3/8	6	2 1/2	19	10	6	6 1/2	20	10 1/2	6	10 1/2	21	11 1/8
5	10 5/8	18	9 3/4	6	2 5/8	19	10 3/8	6	6 5/8	20	10 7/8	6	10 5/8	21	11 1/2
5	10 3/4	18	10 1/8	6	2 3/4	19	10 3/4	6	6 3/4	20	11 3/8	6	10 3/4	21	11 7/8
5	10 7/8	18	10 1/2	6	2 7/8	19	11 1/8	6	6 7/8	20	11 3/4	6	10 7/8	22	0 1/4
5	11	18	11	6	3	19	11 1/2	6	7	21	0 1/8	6	11	22	0 5/8
5	11 1/8	18	11 3/8	6	3 1/8	19	11 7/8	6	7 1/8	21	0 1/2	6	11 1/8	22	1
5	11 1/4	18	11 3/4	6	3 1/4	20	0 3/8	6	7 1/4	21	0 7/8	6	11 1/4	22	1 1/2
5	11 3/8	19	0 1/8	6	3 3/8	20	0 3/4	6	7 3/8	21	1 1/4	6	11 3/8	22	1 7/8
5	11 1/2	19	0 1/2	6	3 1/2	20	1 1/8	6	7 1/2	21	1 5/8	6	11 1/2	22	2 1/4
5	11 5/8	19	0 7/8	6	3 5/8	20	1 1/2	6	7 5/8	21	2	6	11 5/8	22	2 5/8
5	11 3/4	19	1 3/8	6	3 3/4	20	1 7/8	6	7 3/4	21	2 1/2	6	11 3/4	22	3
5	11 7/8	19	1 3/4	6	3 7/8	20	2 1/4	6	7 7/8	21	2 7/8	6	11 7/8	22	3 3/8
6	0	19	2 1/8	6	4	20	2 5/8	6	8	21	3 1/4	7	0	22	3 7/8
6	0 1/8	19	2 1/2	6	4 1/8	20	3	6	8 1/8	21	3 5/8	7	0 1/8	22	4 1/4
6	0 1/4	19	2 7/8	6	4 1/4	20	3 1/2	6	8 1/4	21	4	7	0 1/4	22	4 5/8
6	0 3/8	19	3 1/4	6	4 3/8	20	3 7/8	6	8 3/8	21	4 3/8	7	0 3/8	22	5
6	0 1/2	19	3 5/8	6	4 1/2	20	4 1/4	6	8 1/2	21	4 3/4	7	0 1/2	22	5 3/8
6	0 5/8	19	4	6	4 5/8	20	4 5/8	6	8 5/8	21	5 1/8	7	0 5/8	22	5 3/4
6	0 3/4	19	4 1/2	6	4 3/4	20	5	6	8 3/4	21	5 1/2	7	0 3/4	22	6 1/8
6	0 7/8	19	4 7/8	6	4 7/8	20	5 3/8	6	8 7/8	21	6	7	0 7/8	22	6 1/2
6	1	19	5 1/4	6	5	20	5 7/8	6	9	21	6 3/8	7	1	22	7
6	1 1/8	19	5 5/8	6	5 1/8	20	6 1/4	6	9 1/8	21	6 3/4	7	1 1/8	22	7 3/8
6	1 1/4	19	6	6	5 1/4	20	6 5/8	6	9 1/4	21	7 1/8	7	1 1/4	22	7 3/4
6	1 3/8	19	6 3/8	6	5 3/8	20	7	6	9 3/8	21	7 5/8	7	1 3/8	22	8 1/8
6	1 1/2	19	6 7/8	6	5 1/2	20	7 3/8	6	9 1/2	21	8	7	1 1/2	22	8 1/2
6	1 5/8	19	7 1/4	6	5 5/8	20	7 3/4	6	9 5/8	21	8 3/8	7	1 5/8	22	8 7/8
6	1 3/4	19	7 5/8	6	5 3/4	20	8 1/8	6	9 3/4	21	8 3/4	7	1 3/4	22	9 1/4
6	1 7/8	19	8	6	5 7/8	20	8 1/2	6	9 7/8	21	9 1/8	7	1 7/8	22	9 3/4

For ANGLE IRON measuring $\frac{5}{8}$ of an Inch thick, diagonally across the

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGT REQUIR FOR RI
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.
7	2	22	$10\frac{1}{8}$	7	6	23	$10\frac{5}{8}$	7	10	24	$11\frac{1}{4}$	8	2	25
7	$2\frac{1}{8}$	22	$10\frac{3}{8}$	7	$6\frac{1}{8}$	23	11	7	$10\frac{1}{8}$	24	$11\frac{5}{8}$	8	$2\frac{1}{8}$	26
7	$2\frac{1}{4}$	22	$10\frac{7}{8}$	7	$6\frac{1}{4}$	23	$11\frac{1}{2}$	7	$10\frac{1}{4}$	25	0	8	$2\frac{1}{4}$	26
7	$2\frac{3}{8}$	22	$11\frac{1}{4}$	7	$6\frac{3}{8}$	23	$11\frac{7}{8}$	7	$10\frac{3}{8}$	25	$0\frac{3}{8}$	8	$2\frac{3}{8}$	26
7	$2\frac{1}{2}$	22	$11\frac{5}{8}$	7	$6\frac{1}{2}$	24	$0\frac{1}{4}$	7	$10\frac{1}{2}$	25	$0\frac{3}{4}$	8	$2\frac{1}{2}$	26
7	$2\frac{5}{8}$	23	0	7	$6\frac{5}{8}$	24	$0\frac{5}{8}$	7	$10\frac{5}{8}$	25	$1\frac{1}{4}$	8	$2\frac{5}{8}$	26
7	$2\frac{3}{4}$	23	$0\frac{1}{8}$	7	$6\frac{3}{4}$	24	1	7	$10\frac{3}{4}$	25	$1\frac{5}{8}$	8	$2\frac{3}{4}$	26
7	$2\frac{7}{8}$	23	$0\frac{7}{8}$	7	$6\frac{7}{8}$	24	$1\frac{3}{8}$	7	$10\frac{7}{8}$	25	2	8	$2\frac{7}{8}$	26
7	3	23	$1\frac{1}{4}$	7	7	24	$1\frac{3}{4}$	7	11	25	$2\frac{3}{8}$	8	3	26
7	$3\frac{1}{8}$	23	$1\frac{5}{8}$	7	$7\frac{1}{8}$	24	$2\frac{1}{4}$	7	$11\frac{1}{8}$	25	$2\frac{3}{4}$	8	$3\frac{1}{8}$	26
7	$3\frac{1}{4}$	23	2	7	$7\frac{1}{4}$	24	$2\frac{5}{8}$	7	$11\frac{1}{4}$	25	$3\frac{1}{8}$	8	$3\frac{1}{4}$	26
7	$3\frac{3}{8}$	23	$2\frac{3}{8}$	7	$7\frac{3}{8}$	24	3	7	$11\frac{3}{8}$	25	$3\frac{1}{2}$	8	$3\frac{3}{8}$	26
7	$3\frac{1}{2}$	23	$2\frac{3}{4}$	7	$7\frac{1}{2}$	24	$3\frac{3}{8}$	7	$11\frac{1}{2}$	25	$3\frac{7}{8}$	8	$3\frac{1}{2}$	26
7	$3\frac{5}{8}$	23	$3\frac{1}{4}$	7	$7\frac{5}{8}$	24	$3\frac{3}{4}$	7	$11\frac{5}{8}$	25	$4\frac{3}{8}$	8	$3\frac{5}{8}$	26
7	$3\frac{3}{4}$	23	$3\frac{5}{8}$	7	$7\frac{3}{4}$	24	$4\frac{1}{8}$	7	$11\frac{3}{4}$	25	$4\frac{3}{4}$	8	$3\frac{3}{4}$	26
7	$3\frac{7}{8}$	23	4	7	$7\frac{7}{8}$	24	$4\frac{1}{2}$	7	$11\frac{7}{8}$	25	$5\frac{1}{8}$	8	$3\frac{7}{8}$	26
7	4	23	$4\frac{3}{8}$	7	8	24	$4\frac{7}{8}$	8	0	25	$5\frac{1}{2}$	8	4	26
7	$4\frac{1}{8}$	23	$4\frac{3}{4}$	7	$8\frac{1}{8}$	24	$5\frac{3}{8}$	8	$0\frac{1}{8}$	25	$5\frac{7}{8}$	8	$4\frac{1}{8}$	26
7	$4\frac{1}{4}$	23	$5\frac{1}{8}$	7	$8\frac{1}{4}$	24	$5\frac{3}{4}$	8	$0\frac{1}{4}$	25	$6\frac{1}{4}$	8	$4\frac{1}{4}$	26
7	$4\frac{3}{8}$	23	$5\frac{1}{2}$	7	$8\frac{3}{8}$	24	$6\frac{1}{8}$	8	$0\frac{3}{8}$	25	$6\frac{5}{8}$	8	$4\frac{3}{8}$	26
7	$4\frac{1}{2}$	23	6	7	$8\frac{1}{2}$	24	$6\frac{1}{2}$	8	$0\frac{1}{2}$	25	7	8	$4\frac{1}{2}$	26
7	$4\frac{5}{8}$	23	$6\frac{3}{8}$	7	$8\frac{5}{8}$	24	$6\frac{7}{8}$	8	$0\frac{5}{8}$	25	$7\frac{1}{2}$	8	$4\frac{5}{8}$	26
7	$4\frac{3}{4}$	23	$6\frac{3}{4}$	7	$8\frac{3}{4}$	24	$7\frac{1}{4}$	8	$0\frac{3}{4}$	25	$7\frac{7}{8}$	8	$4\frac{3}{4}$	26
7	$4\frac{7}{8}$	23	$7\frac{1}{8}$	7	$8\frac{7}{8}$	24	$7\frac{5}{8}$	8	$0\frac{7}{8}$	25	$8\frac{1}{4}$	8	$4\frac{7}{8}$	26
7	5	23	$7\frac{1}{2}$	7	9	24	8	8	1	25	$8\frac{5}{8}$	8	5	26
7	$5\frac{1}{8}$	23	$7\frac{7}{8}$	7	$9\frac{1}{8}$	24	$8\frac{1}{2}$	8	$1\frac{1}{8}$	25	9	8	$5\frac{1}{8}$	26
7	$5\frac{1}{4}$	23	$8\frac{1}{4}$	7	$9\frac{1}{4}$	24	$8\frac{7}{8}$	8	$1\frac{1}{4}$	25	$9\frac{1}{2}$	8	$5\frac{1}{4}$	26
7	$5\frac{3}{8}$	23	$8\frac{3}{4}$	7	$9\frac{3}{8}$	24	$9\frac{1}{4}$	8	$1\frac{3}{8}$	25	$9\frac{7}{8}$	8	$5\frac{3}{8}$	26
7	$5\frac{1}{2}$	23	$9\frac{1}{8}$	7	$9\frac{1}{2}$	24	$9\frac{5}{8}$	8	$1\frac{1}{2}$	25	$10\frac{1}{4}$	8	$5\frac{1}{2}$	26
7	$5\frac{5}{8}$	23	$9\frac{1}{2}$	7	$9\frac{5}{8}$	24	10	8	$1\frac{5}{8}$	25	$10\frac{5}{8}$	8	$5\frac{5}{8}$	26
7	$5\frac{3}{4}$	23	$9\frac{7}{8}$	7	$9\frac{3}{4}$	24	$10\frac{1}{8}$	8	$1\frac{3}{4}$	25	11	8	$5\frac{3}{4}$	26
7	$5\frac{7}{8}$	23	$10\frac{1}{4}$	7	$9\frac{7}{8}$	24	$10\frac{7}{8}$	8	$1\frac{7}{8}$	25	$11\frac{3}{8}$	8	$5\frac{7}{8}$	27

TABLE V.,

For Angle Iron measuring $\frac{1}{4}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
0	9	2	9	1	1	3	$9\frac{1}{2}$	1	5	4	$10\frac{1}{8}$	1	9	5	$10\frac{5}{8}$
0	$9\frac{1}{8}$	2	$9\frac{3}{8}$	1	$1\frac{1}{8}$	3	$9\frac{7}{8}$	1	$5\frac{1}{8}$	4	$10\frac{3}{8}$	1	$9\frac{1}{8}$	5	11
0	$9\frac{1}{4}$	2	$9\frac{3}{4}$	1	$1\frac{1}{4}$	3	$10\frac{3}{8}$	1	$5\frac{1}{4}$	4	$10\frac{7}{8}$	1	$9\frac{1}{4}$	5	$11\frac{1}{8}$
0	$9\frac{3}{8}$	2	$10\frac{1}{8}$	1	$1\frac{3}{8}$	3	$10\frac{3}{4}$	1	$5\frac{3}{8}$	4	$11\frac{1}{4}$	1	$9\frac{3}{8}$	5	$11\frac{7}{8}$
0	$9\frac{1}{2}$	2	$10\frac{1}{2}$	1	$1\frac{1}{2}$	3	$11\frac{1}{8}$	1	$5\frac{1}{2}$	4	$11\frac{5}{8}$	1	$9\frac{1}{2}$	6	$0\frac{1}{4}$
0	$9\frac{5}{8}$	2	$10\frac{7}{8}$	1	$1\frac{5}{8}$	3	$11\frac{1}{2}$	1	$5\frac{5}{8}$	5	0	1	$9\frac{5}{8}$	6	$0\frac{5}{8}$
0	$9\frac{3}{4}$	2	$11\frac{3}{8}$	1	$1\frac{3}{4}$	3	$11\frac{7}{8}$	1	$5\frac{3}{4}$	5	$0\frac{3}{8}$	1	$9\frac{3}{4}$	6	1
0	$9\frac{7}{8}$	2	$11\frac{3}{4}$	1	$1\frac{7}{8}$	4	$0\frac{1}{4}$	1	$5\frac{7}{8}$	5	$0\frac{7}{8}$	1	$9\frac{7}{8}$	6	$1\frac{3}{8}$
0	10	3	$0\frac{1}{8}$	1	2	4	$0\frac{5}{8}$	1	6	5	$1\frac{1}{4}$	1	10	6	$1\frac{3}{4}$
0	$10\frac{1}{8}$	3	$0\frac{1}{2}$	1	$2\frac{1}{8}$	4	1	1	$6\frac{1}{8}$	5	$1\frac{5}{8}$	1	$10\frac{1}{8}$	6	$2\frac{1}{4}$
0	$10\frac{1}{4}$	3	$0\frac{7}{8}$	1	$2\frac{1}{4}$	4	$1\frac{3}{8}$	1	$6\frac{1}{4}$	5	2	1	$10\frac{1}{4}$	6	$2\frac{5}{8}$
0	$10\frac{3}{8}$	3	$1\frac{1}{4}$	1	$2\frac{3}{8}$	4	$1\frac{7}{8}$	1	$6\frac{3}{8}$	5	$2\frac{3}{8}$	1	$10\frac{3}{8}$	6	3
0	$10\frac{1}{2}$	3	$1\frac{5}{8}$	1	$2\frac{1}{2}$	4	$2\frac{1}{4}$	1	$6\frac{1}{2}$	5	$2\frac{3}{4}$	1	$10\frac{1}{2}$	6	$3\frac{1}{8}$
0	$10\frac{5}{8}$	3	2	1	$2\frac{5}{8}$	4	$2\frac{5}{8}$	1	$6\frac{5}{8}$	5	$3\frac{1}{8}$	1	$10\frac{5}{8}$	6	$3\frac{3}{4}$
0	$10\frac{3}{4}$	3	$2\frac{1}{2}$	1	$2\frac{3}{4}$	4	3	1	$6\frac{3}{4}$	5	$3\frac{5}{8}$	1	$10\frac{3}{4}$	6	$4\frac{1}{8}$
0	$10\frac{7}{8}$	3	$2\frac{7}{8}$	1	$2\frac{7}{8}$	4	$3\frac{3}{8}$	1	$6\frac{7}{8}$	5	4	1	$10\frac{7}{8}$	6	$4\frac{1}{2}$
0	11	3	$3\frac{1}{4}$	1	3	4	$3\frac{3}{4}$	1	7	5	$4\frac{3}{8}$	1	11	6	$4\frac{7}{8}$
0	$11\frac{1}{8}$	3	$3\frac{5}{8}$	1	$3\frac{1}{8}$	4	$4\frac{1}{8}$	1	$7\frac{1}{8}$	5	$4\frac{3}{4}$	1	$11\frac{1}{8}$	6	$5\frac{3}{8}$
0	$11\frac{1}{4}$	3	4	1	$3\frac{1}{4}$	4	$4\frac{1}{2}$	1	$7\frac{1}{4}$	5	$5\frac{1}{8}$	1	$11\frac{1}{4}$	6	$5\frac{3}{4}$
0	$11\frac{3}{8}$	3	$4\frac{3}{8}$	1	$3\frac{3}{8}$	4	5	1	$7\frac{3}{8}$	5	$5\frac{1}{2}$	1	$11\frac{3}{8}$	6	$6\frac{1}{8}$
0	$11\frac{1}{2}$	3	$4\frac{7}{8}$	1	$3\frac{1}{2}$	4	$5\frac{3}{8}$	1	$7\frac{1}{2}$	5	$5\frac{7}{8}$	1	$11\frac{1}{2}$	6	$6\frac{1}{2}$
0	$11\frac{5}{8}$	3	$5\frac{1}{4}$	1	$3\frac{5}{8}$	4	$5\frac{3}{4}$	1	$7\frac{5}{8}$	5	$6\frac{3}{8}$	1	$11\frac{5}{8}$	6	$6\frac{7}{8}$
0	$11\frac{3}{4}$	3	$5\frac{5}{8}$	1	$3\frac{3}{4}$	4	$6\frac{1}{8}$	1	$7\frac{3}{4}$	5	$6\frac{7}{8}$	1	$11\frac{3}{4}$	6	$7\frac{1}{4}$
0	$11\frac{7}{8}$	3	6	1	$3\frac{7}{8}$	4	$6\frac{1}{2}$	1	$7\frac{7}{8}$	5	$7\frac{1}{8}$	1	$11\frac{7}{8}$	6	$7\frac{5}{8}$
1	0	3	$6\frac{3}{8}$	1	4	4	7	1	8	5	$7\frac{1}{2}$	2	0	6	$8\frac{1}{8}$
1	$0\frac{1}{8}$	3	$6\frac{3}{4}$	1	$4\frac{1}{8}$	4	$7\frac{3}{8}$	1	$8\frac{1}{8}$	5	8	2	$0\frac{1}{8}$	6	$8\frac{1}{2}$
1	$0\frac{1}{4}$	3	$7\frac{1}{8}$	1	$4\frac{1}{4}$	4	$7\frac{3}{4}$	1	$8\frac{1}{4}$	5	$8\frac{3}{8}$	2	$0\frac{1}{4}$	6	$8\frac{7}{8}$
1	$0\frac{3}{8}$	3	$7\frac{5}{8}$	1	$4\frac{3}{8}$	4	$8\frac{1}{8}$	1	$8\frac{3}{8}$	5	$8\frac{3}{4}$	2	$0\frac{3}{8}$	6	$9\frac{1}{4}$
1	$0\frac{1}{2}$	3	8	1	$4\frac{1}{2}$	4	$8\frac{1}{2}$	1	$8\frac{1}{2}$	5	$9\frac{1}{8}$	2	$0\frac{1}{2}$	6	$9\frac{5}{8}$
1	$0\frac{5}{8}$	3	$8\frac{3}{8}$	1	$4\frac{5}{8}$	4	$8\frac{7}{8}$	1	$8\frac{5}{8}$	5	$9\frac{1}{2}$	2	$0\frac{5}{8}$	6	10
1	$0\frac{3}{4}$	3	$8\frac{3}{4}$	1	$4\frac{3}{4}$	4	$9\frac{1}{4}$	1	$8\frac{3}{4}$	5	$9\frac{7}{8}$	2	$0\frac{3}{4}$	6	$10\frac{1}{2}$
1	$0\frac{7}{8}$	3	$9\frac{1}{8}$	1	$4\frac{7}{8}$	4	$9\frac{5}{8}$	1	$8\frac{7}{8}$	5	$10\frac{1}{4}$	2	$0\frac{7}{8}$	6	$10\frac{7}{8}$

For Angle Iron measuring ½ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
4	6	14	4 3/4	4	10	15	5 3/8	5	2	16	5 7/8	5	6	17	6 1/2
4	6 1/8	14	5 1/8	4	10 1/8	15	5 3/4	5	2 1/8	16	6 1/4	5	6 1/8	17	6 7/8
4	6 1/4	14	5 1/2	4	10 1/4	15	6 1/8	5	2 1/4	16	6 5/8	5	6 1/4	17	7 1/4
4	6 3/8	14	5 7/8	4	10 3/8	15	6 1/2	5	2 3/8	16	7	5	6 3/8	17	7 5/8
4	6 1/2	14	6 3/8	4	10 1/2	15	6 7/8	5	2 1/2	16	7 1/2	5	6 1/2	17	8
4	6 5/8	14	6 3/4	4	10 5/8	15	7 1/4	5	2 5/8	16	7 7/8	5	6 5/8	17	8 3/8
4	6 3/4	14	7 1/8	4	10 3/4	15	7 3/4	5	2 3/4	16	8 1/4	5	6 3/4	17	8 7/8
4	6 7/8	14	7 1/2	4	10 7/8	15	8 1/8	5	2 7/8	16	8 5/8	5	6 7/8	17	9 1/4
4	7	14	7 7/8	4	11	15	8 1/2	5	3	16	9	5	7	17	9 5/8
4	7 1/8	14	8 1/4	4	11 1/8	15	8 7/8	5	3 1/8	16	9 3/8	5	7 1/8	17	10
4	7 1/4	14	8 3/4	4	11 1/4	15	9 1/4	5	3 1/4	16	9 7/8	5	7 1/4	17	10 3/8
4	7 3/8	14	9 1/8	4	11 3/8	15	9 5/8	5	3 3/8	16	10 1/4	5	7 3/8	17	10 3/4
4	7 1/2	14	9 1/2	4	11 1/2	15	10	5	3 1/2	16	10 5/8	5	7 1/2	17	11 1/8
4	7 5/8	14	9 7/8	4	11 5/8	15	10 3/8	5	3 5/8	16	11	5	7 5/8	17	11 1/2
4	7 3/4	14	10 1/4	4	11 3/4	15	10 7/8	5	3 3/4	16	11 3/8	5	7 3/4	18	0
4	7 7/8	14	10 5/8	4	11 7/8	15	11 1/4	5	3 7/8	16	11 3/4	5	7 7/8	18	0 3/8
4	8	14	11	5	0	15	11 5/8	5	4	17	0 1/8	5	8	18	0 3/4
4	8 1/8	14	11 1/2	5	0 1/8	16	0	5	4 1/8	17	0 5/8	5	8 1/8	18	1 1/8
4	8 1/4	14	11 7/8	5	0 1/4	16	0 3/8	5	4 1/4	17	1	5	8 1/4	18	1 1/2
4	8 3/8	15	0 1/4	5	0 3/8	16	0 3/4	5	4 3/8	17	1 3/8	5	8 3/8	18	1 7/8
4	8 1/2	15	0 5/8	5	0 1/2	16	1 1/8	5	4 1/2	17	1 3/4	5	8 1/2	18	2 3/8
4	8 5/8	15	1	5	0 5/8	16	1 5/8	5	4 5/8	17	2 1/8	5	8 5/8	18	2 3/4
4	8 3/4	15	1 3/8	5	0 3/4	16	2	5	4 3/4	17	2 1/2	5	8 3/4	18	3 1/8
4	8 7/8	15	1 7/8	5	0 7/8	16	2 3/8	5	4 7/8	17	2 7/8	5	8 7/8	18	3 1/2
4	9	15	2 1/4	5	1	16	2 3/4	5	5	17	3 3/8	5	9	18	3 7/8
4	9 1/8	15	2 5/8	5	1 1/8	16	3 1/8	5	5 1/8	17	3 3/4	5	9 1/8	18	4 1/4
4	9 1/4	15	3	5	1 1/4	16	3 1/2	5	5 1/4	17	4 1/8	5	9 1/4	18	4 5/8
4	9 3/8	15	3 3/8	5	1 3/8	16	3 7/8	5	5 3/8	17	4 1/2	5	9 3/8	18	5
4	9 1/2	15	3 3/4	5	1 1/2	16	4 3/8	5	5 1/2	17	4 7/8	5	9 1/2	18	5 1/2
4	9 5/8	15	4 1/8	5	1 5/8	16	4 3/4	5	5 5/8	17	5 1/4	5	9 5/8	18	5 7/8
4	9 3/4	15	4 1/2	5	1 3/4	16	5 1/8	5	5 3/4	17	5 5/8	5	9 3/4	18	6 1/4
4	9 7/8	15	4 7/8	5	1 7/8	16	5 1/2	5	5 7/8	17	6	5	9 7/8	18	6 5/8

For Angle Iron measuring ½ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
5	10	18	7	6	2	19	7 5/8	6	6	20	8 1/8	6	10	21	8 3/4
5	10 1/8	18	7 3/8	6	2 1/8	19	8	6	6 1/8	20	8 1/2	6	10 1/8	21	9 1/8
5	10 1/4	18	7 7/8	6	2 1/4	19	8 3/8	6	6 1/4	20	9	6	10 1/4	21	9 1/8
5	10 3/8	18	8 1/4	6	2 3/8	19	8 3/4	6	6 3/8	20	9 3/8	6	10 3/8	21	9 7/8
5	10 1/2	18	8 5/8	6	2 1/2	19	9 1/8	6	6 1/2	20	9 3/4	6	10 1/2	21	10 3/8
5	10 5/8	18	9	6	2 5/8	19	9 1/8	6	6 5/8	20	10 1/8	6	10 5/8	21	10 3/4
5	10 3/4	18	9 3/8	6	2 3/4	19	10	6	6 3/4	20	10 1/2	6	10 3/4	21	11 1/8
5	10 7/8	18	9 3/4	6	2 7/8	19	10 3/8	6	6 7/8	20	10 5/8	6	10 7/8	21	11 1/2
5	11	18	10 1/8	6	3	19	10 3/4	6	7	20	11 3/8	6	11	21	11 7/8
5	11 1/8	18	10 1/2	6	3 1/8	19	11 1/8	6	7 1/8	20	11 3/4	6	11 1/8	22	0 1/4
5	11 1/4	18	11	6	3 1/4	19	11 1/2	6	7 1/4	21	0 1/8	6	11 1/4	22	0 5/8
5	11 3/8	18	11 3/8	6	3 3/8	19	11 7/8	6	7 3/8	21	0 1/2	6	11 3/8	22	1
5	11 1/2	18	11 3/4	6	3 1/2	20	0 3/8	6	7 1/2	21	0 7/8	6	11 1/2	22	1 1/2
5	11 5/8	19	0 1/8	6	3 5/8	20	0 3/4	6	7 5/8	21	1 1/4	6	11 5/8	22	1 7/8
5	11 3/4	19	0 1/2	6	3 3/4	20	1 1/8	6	7 3/4	21	1 5/8	6	11 3/4	22	2 1/4
5	11 7/8	19	0 7/8	6	3 7/8	20	1 1/2	6	7 7/8	21	2	6	11 7/8	22	2 5/8
6	0	19	1 3/8	6	4	20	1 7/8	6	8	21	2 1/2	7	0	22	3
6	0 1/8	19	1 3/4	6	4 1/8	20	2 1/4	6	8 1/8	21	2 7/8	7	0 1/8	22	3 3/8
6	0 1/4	19	2 1/8	6	4 1/4	20	2 5/8	6	8 1/4	21	3 1/4	7	0 1/4	22	3 7/8
6	0 3/8	19	2 1/2	6	4 3/8	20	3	6	8 3/8	21	3 5/8	7	0 3/8	22	4 1/4
6	0 1/2	19	2 7/8	6	4 1/2	20	3 1/2	6	8 1/2	21	4	7	0 1/2	22	4 5/8
6	0 5/8	19	3 1/4	6	4 5/8	20	3 7/8	6	8 5/8	21	4 3/8	7	0 5/8	22	5
6	0 3/4	19	3 5/8	6	4 3/4	20	4 1/4	6	8 3/8	21	4 3/4	7	0 3/4	22	5 3/8
6	0 7/8	19	4	6	4 7/8	20	4 5/8	6	8 7/8	21	5 1/8	7	0 7/8	22	5 3/4
6	1	19	4 1/2	6	5	20	5	6	9	21	5 1/2	7	1	22	6 1/8
6	1 1/8	19	4 7/8	6	5 1/8	20	5 3/8	6	9 1/8	21	6	7	1 1/8	22	6 1/8
6	1 1/4	19	5 1/4	6	5 1/4	20	5 7/8	6	9 1/4	21	6 3/8	7	1 1/4	22	7
6	1 3/8	19	5 5/8	6	5 3/8	20	6 1/8	6	9 3/8	21	6 3/4	7	1 3/8	22	7 3/8
6	1 1/2	19	6	6	5 1/2	20	6 5/8	6	9 1/2	21	7 1/8	7	1 1/2	22	7 3/4
6	1 5/8	19	6 3/8	6	5 5/8	20	7	6	9 5/8	21	7 5/8	7	1 5/8	22	8 1/8
6	1 3/4	19	6 7/8	6	5 3/4	20	7 3/8	6	9 3/4	21	8	7	1 3/4	22	8 1/2
6	1 7/8	19	7 1/4	6	5 7/8	20	7 3/4	6	9 7/8	21	8 3/8	7	1 7/8	22	8 7/8

For Angle Iron measuring ½ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
7	2	22	9 1/4	7	6	23	9 7/8	7	10	24	10 1/2	8	2	25	11
7	2 1/8	22	9 3/4	7	6 1/8	23	10 1/4	7	10 1/8	24	10 7/8	8	2 1/8	25	11 3/8
7	2 1/4	22	10 1/8	7	6 1/4	23	10 5/8	7	10 1/4	24	11 1/4	8	2 1/4	25	11 3/4
7	2 3/8	22	10 1/2	7	6 3/8	23	11	7	10 3/8	24	11 5/8	8	2 3/8	26	0 1/8
7	2 1/2	22	10 7/8	7	6 1/2	23	11 1/2	7	10 1/2	25	0	8	2 1/2	26	0 5/8
7	2 5/8	22	11 1/4	7	6 5/8	23	11 7/8	7	10 5/8	25	0 3/8	8	2 5/8	26	1
7	2 3/4	22	11 5/8	7	6 3/4	24	0 1/4	7	10 3/4	25	0 3/4	8	2 3/4	26	1 3/8
7	2 7/8	23	0	7	6 7/8	24	0 5/8	7	10 7/8	25	1 1/4	8	2 7/8	26	1 3/4
7	3	23	0 1/2	7	7	24	1	7	11	25	1 5/8	8	3	26	2 1/8
7	3 1/8	23	0 7/8	7	7 1/8	24	1 3/8	7	11 1/8	25	2	8	3 1/8	26	2 1/2
7	3 1/4	23	1 1/4	7	7 1/4	24	1 3/4	7	11 1/4	25	2 3/8	8	3 1/4	26	2 7/8
7	3 3/8	23	1 5/8	7	7 3/8	24	2 1/4	7	11 3/8	25	2 3/4	8	3 3/8	26	3 3/8
7	3 1/2	23	2	7	7 1/2	24	2 5/8	7	11 1/2	25	3 1/8	8	3 1/2	26	3 3/4
7	3 5/8	23	2 3/8	7	7 5/8	24	3	7	11 5/8	25	3 1/2	8	3 5/8	26	4 1/8
7	3 3/4	23	2 3/4	7	7 3/4	24	3 3/8	7	11 3/4	25	3 7/8	8	3 3/4	26	4 1/2
7	3 7/8	23	3 1/4	7	7 7/8	24	3 3/4	7	11 7/8	25	4 3/8	8	3 7/8	26	4 7/8
7	4	23	3 5/8	7	8	24	4 1/8	8	0	25	4 3/4	8	4	26	5 1/4
7	4 1/8	23	4	7	8 1/8	24	4 1/2	8	0 1/8	25	5 1/8	8	4 1/8	26	5 5/8
7	4 1/4	23	4 3/8	7	8 1/4	24	4 7/8	8	0 1/4	25	5 1/2	8	4 1/4	26	6
7	4 3/8	23	4 3/4	7	8 3/8	24	5 3/8	8	0 3/8	25	5 7/8	8	4 3/8	26	6 1/2
7	4 1/2	23	5 1/8	7	8 1/2	24	5 3/4	8	0 1/2	25	6 1/4	8	4 1/2	26	6 7/8
7	4 5/8	23	5 1/2	7	8 5/8	24	6 1/8	8	0 5/8	25	6 5/8	8	4 5/8	26	7 1/4
7	4 3/4	23	6	7	8 3/4	24	6 1/2	8	0 3/4	25	7	8	4 3/4	26	7 5/8
7	4 7/8	23	6 3/8	7	8 7/8	24	6 7/8	8	0 7/8	25	7 1/2	8	4 7/8	26	8
7	5	23	6 3/4	7	9	24	7 1/4	8	1	25	7 7/8	8	5	26	8 3/8
7	5 1/8	23	7 1/8	7	9 1/8	24	7 5/8	8	1 1/8	25	8 1/4	8	5 1/8	26	8 7/8
7	5 1/4	23	7 1/2	7	9 1/4	24	8	8	1 1/4	25	8 5/8	8	5 1/4	26	9 1/4
7	5 3/8	23	7 7/8	7	9 3/8	24	8 1/2	8	1 3/8	25	9	8	5 3/8	26	9 5/8
7	5 1/2	23	8 1/4	7	9 1/2	24	8 7/8	8	1 1/2	25	9 1/2	8	5 1/2	26	10
7	5 5/8	23	8 3/4	7	9 5/8	24	9 1/4	8	1 5/8	25	9 7/8	8	5 5/8	26	10 3/8
7	5 3/4	23	9 1/8	7	9 3/4	24	9 5/8	8	1 3/4	25	10 1/4	8	5 3/4	26	10 3/4
7	5 7/8	23	9 1/2	7	9 7/8	24	10	8	1 7/8	25	10 5/8	8	5 7/8	26	11 1/8

TABLE IV.,

For Angle Iron measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.	LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
6	1	$10\frac{3}{4}$	0	10	2	$11\frac{3}{8}$	1	2	3	$11\frac{7}{8}$	1	6	5	$0\frac{3}{8}$
$6\frac{1}{8}$	1	$11\frac{1}{8}$	0	$10\frac{1}{8}$	2	$11\frac{3}{4}$	1	$2\frac{1}{8}$	4	$0\frac{1}{4}$	1	$6\frac{1}{8}$	5	$0\frac{7}{8}$
$6\frac{1}{4}$	1	$11\frac{1}{4}$	0	$10\frac{1}{4}$	3	$0\frac{1}{8}$	1	$2\frac{1}{4}$	4	$0\frac{5}{8}$	1	$6\frac{1}{4}$	5	$1\frac{1}{4}$
$6\frac{3}{8}$	1	$11\frac{7}{8}$	0	$10\frac{3}{8}$	3	$0\frac{1}{4}$	1	$2\frac{3}{8}$	4	1	1	$6\frac{3}{8}$	5	$1\frac{5}{8}$
$6\frac{1}{2}$	2	$0\frac{3}{8}$	0	$10\frac{1}{2}$	3	$0\frac{7}{8}$	1	$2\frac{1}{2}$	4	$1\frac{3}{8}$	1	$6\frac{1}{2}$	5	2
$6\frac{5}{8}$	2	$0\frac{3}{4}$	0	$10\frac{5}{8}$	3	$1\frac{1}{4}$	1	$2\frac{5}{8}$	4	$1\frac{7}{8}$	1	$6\frac{5}{8}$	5	$2\frac{3}{8}$
$6\frac{3}{4}$	2	$1\frac{1}{8}$	0	$10\frac{3}{4}$	3	$1\frac{5}{8}$	1	$2\frac{3}{4}$	4	$2\frac{1}{4}$	1	$6\frac{3}{4}$	5	$2\frac{3}{4}$
$6\frac{7}{8}$	2	$1\frac{1}{2}$	0	$10\frac{7}{8}$	3	2	1	$2\frac{7}{8}$	4	$2\frac{5}{8}$	1	$6\frac{7}{8}$	5	$3\frac{1}{8}$
7	2	$1\frac{7}{8}$	0	11	3	$2\frac{1}{2}$	1	3	4	3	1	7	5	$3\frac{5}{8}$
$7\frac{1}{8}$	2	$2\frac{3}{8}$	0	$11\frac{1}{8}$	3	$2\frac{7}{8}$	1	$3\frac{1}{8}$	4	$3\frac{3}{8}$	1	$7\frac{1}{8}$	5	4
$7\frac{1}{4}$	2	$2\frac{3}{4}$	0	$11\frac{1}{4}$	3	$3\frac{1}{4}$	1	$3\frac{1}{4}$	4	$3\frac{3}{4}$	1	$7\frac{1}{4}$	5	$4\frac{3}{8}$
$7\frac{3}{8}$	2	$3\frac{1}{8}$	0	$11\frac{3}{8}$	3	$3\frac{5}{8}$	1	$3\frac{3}{8}$	4	$4\frac{1}{8}$	1	$7\frac{3}{8}$	5	$4\frac{3}{4}$
$7\frac{1}{2}$	2	$3\frac{1}{2}$	0	$11\frac{1}{2}$	3	4	1	$3\frac{1}{2}$	4	$4\frac{1}{2}$	1	$7\frac{1}{2}$	5	$5\frac{1}{8}$
$7\frac{5}{8}$	2	$3\frac{7}{8}$	0	$11\frac{5}{8}$	3	$4\frac{3}{8}$	1	$3\frac{5}{8}$	4	5	1	$7\frac{5}{8}$	5	$5\frac{1}{2}$
$7\frac{3}{4}$	2	$4\frac{1}{4}$	0	$11\frac{3}{4}$	3	$4\frac{7}{8}$	1	$3\frac{3}{4}$	4	$5\frac{3}{8}$	1	$7\frac{3}{4}$	5	$5\frac{7}{8}$
$7\frac{7}{8}$	2	$4\frac{5}{8}$	0	$11\frac{7}{8}$	3	$5\frac{1}{4}$	1	$3\frac{7}{8}$	4	$5\frac{3}{4}$	1	$7\frac{7}{8}$	5	$6\frac{3}{8}$
8	2	5	1	0	3	$5\frac{5}{8}$	1	4	4	$6\frac{1}{8}$	1	8	5	$6\frac{3}{4}$
$8\frac{1}{8}$	2	$5\frac{1}{2}$	1	$0\frac{1}{8}$	3	6	1	$4\frac{1}{8}$	4	$6\frac{1}{4}$	1	$8\frac{1}{8}$	5	$7\frac{1}{8}$
$8\frac{1}{4}$	2	$5\frac{7}{8}$	1	$0\frac{1}{4}$	3	$6\frac{3}{8}$	1	$4\frac{1}{4}$	4	7	1	$8\frac{1}{4}$	5	$7\frac{1}{2}$
$8\frac{3}{8}$	2	$6\frac{1}{4}$	1	$0\frac{3}{8}$	3	$6\frac{3}{4}$	1	$4\frac{3}{8}$	4	$7\frac{3}{8}$	1	$8\frac{3}{8}$	5	8
$8\frac{1}{2}$	2	$6\frac{5}{8}$	1	$0\frac{1}{2}$	3	$7\frac{1}{8}$	1	$4\frac{1}{2}$	4	$7\frac{3}{4}$	1	$8\frac{1}{2}$	5	$8\frac{3}{8}$
$8\frac{5}{8}$	2	7	1	$0\frac{5}{8}$	3	$7\frac{5}{8}$	1	$4\frac{5}{8}$	4	$8\frac{1}{8}$	1	$8\frac{5}{8}$	5	$8\frac{3}{4}$
$8\frac{3}{4}$	2	$7\frac{3}{8}$	1	$0\frac{3}{4}$	3	8	1	$4\frac{3}{4}$	4	$8\frac{1}{2}$	1	$8\frac{3}{4}$	5	$9\frac{1}{8}$
$8\frac{7}{8}$	2	$7\frac{3}{4}$	1	$0\frac{7}{8}$	3	$8\frac{3}{8}$	1	$4\frac{7}{8}$	4	$8\frac{7}{8}$	1	$8\frac{7}{8}$	5	$9\frac{1}{2}$
9	2	$8\frac{1}{4}$	1	1	3	$8\frac{3}{4}$	1	5	4	$9\frac{1}{4}$	1	9	5	$9\frac{7}{8}$
$9\frac{1}{8}$	2	$8\frac{5}{8}$	1	$1\frac{1}{8}$	3	$9\frac{1}{8}$	1	$5\frac{1}{8}$	4	$9\frac{5}{8}$	1	$9\frac{1}{8}$	5	$10\frac{1}{4}$
$9\frac{1}{4}$	2	9	1	$1\frac{1}{4}$	3	$9\frac{1}{2}$	1	$5\frac{1}{4}$	4	$10\frac{1}{8}$	1	$9\frac{1}{4}$	5	$10\frac{5}{8}$
$9\frac{3}{8}$	2	$9\frac{3}{8}$	1	$1\frac{3}{8}$	3	$9\frac{7}{8}$	1	$5\frac{3}{8}$	4	$10\frac{1}{2}$	1	$9\frac{3}{8}$	5	11
$9\frac{1}{2}$	2	$9\frac{3}{4}$	1	$1\frac{1}{2}$	3	$10\frac{3}{8}$	1	$5\frac{1}{2}$	4	$10\frac{7}{8}$	1	$9\frac{1}{2}$	5	$11\frac{1}{2}$
$9\frac{5}{8}$	2	$10\frac{1}{8}$	1	$1\frac{5}{8}$	3	$10\frac{3}{4}$	1	$5\frac{5}{8}$	4	$11\frac{1}{4}$	1	$9\frac{5}{8}$	5	$11\frac{7}{8}$
$9\frac{3}{4}$	2	$10\frac{1}{2}$	1	$1\frac{3}{4}$	3	$11\frac{1}{8}$	1	$5\frac{3}{4}$	4	$11\frac{5}{8}$	1	$9\frac{3}{4}$	6	$0\frac{1}{4}$
$9\frac{7}{8}$	2	$10\frac{7}{8}$	1	$1\frac{7}{8}$	3	$11\frac{1}{2}$	1	$5\frac{7}{8}$	5	0	1	$9\frac{7}{8}$	6	$0\frac{5}{8}$

For ANGLE IRON measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
1	10	6	1	2	2	7	$1\frac{1}{2}$	2	6	8	$2\frac{1}{8}$	2	10	9	$2\frac{3}{4}$
1	$10\frac{1}{8}$	6	$1\frac{3}{8}$	2	$2\frac{1}{8}$	7	2	2	$6\frac{1}{8}$	8	$2\frac{1}{2}$	2	$10\frac{1}{8}$	9	$3\frac{1}{8}$
1	$10\frac{1}{4}$	6	$1\frac{3}{4}$	2	$2\frac{1}{4}$	7	$2\frac{3}{8}$	2	$6\frac{1}{4}$	8	$2\frac{7}{8}$	2	$10\frac{1}{4}$	9	$3\frac{1}{2}$
1	$10\frac{3}{8}$	6	$2\frac{1}{4}$	2	$2\frac{3}{8}$	7	$2\frac{3}{4}$	2	$6\frac{3}{8}$	8	$3\frac{3}{8}$	2	$10\frac{3}{8}$	9	$3\frac{7}{8}$
1	$10\frac{1}{2}$	6	$2\frac{5}{8}$	2	$2\frac{1}{2}$	7	$3\frac{1}{8}$	2	$6\frac{1}{2}$	8	$3\frac{3}{4}$	2	$10\frac{1}{2}$	9	$4\frac{1}{4}$
1	$10\frac{5}{8}$	6	3	2	$2\frac{5}{8}$	7	$3\frac{1}{2}$	2	$6\frac{5}{8}$	8	$4\frac{1}{8}$	2	$10\frac{5}{8}$	9	$4\frac{5}{8}$
1	$10\frac{3}{4}$	6	$3\frac{3}{8}$	2	$2\frac{3}{4}$	7	$3\frac{7}{8}$	2	$6\frac{3}{4}$	8	$4\frac{1}{2}$	2	$10\frac{3}{4}$	9	5
1	$10\frac{7}{8}$	6	$3\frac{3}{4}$	2	$2\frac{7}{8}$	7	$4\frac{3}{8}$	2	$6\frac{7}{8}$	8	$4\frac{7}{8}$	2	$10\frac{7}{8}$	9	$5\frac{1}{2}$
1	11	6	$4\frac{1}{8}$	2	3	7	$4\frac{3}{4}$	2	7	8	$5\frac{1}{4}$	2	11	9	$5\frac{7}{8}$
1	$11\frac{1}{8}$	6	$4\frac{1}{2}$	2	$3\frac{1}{8}$	7	$5\frac{1}{8}$	2	$7\frac{1}{8}$	8	$5\frac{5}{8}$	2	$11\frac{1}{8}$	9	$6\frac{1}{4}$
1	$11\frac{1}{4}$	6	$4\frac{7}{8}$	2	$3\frac{1}{4}$	7	$5\frac{1}{2}$	2	$7\frac{1}{4}$	8	6	2	$11\frac{1}{4}$	9	$6\frac{5}{8}$
1	$11\frac{3}{8}$	6	$5\frac{3}{8}$	2	$3\frac{3}{8}$	7	$5\frac{7}{8}$	2	$7\frac{3}{8}$	8	$6\frac{1}{2}$	2	$11\frac{3}{8}$	9	7
1	$11\frac{1}{2}$	6	$5\frac{3}{4}$	2	$3\frac{1}{2}$	7	$6\frac{1}{4}$	2	$7\frac{1}{2}$	8	$6\frac{7}{8}$	2	$11\frac{1}{2}$	9	$7\frac{3}{8}$
1	$11\frac{5}{8}$	6	$6\frac{1}{8}$	2	$3\frac{5}{8}$	7	$6\frac{5}{8}$	2	$7\frac{5}{8}$	8	$7\frac{1}{4}$	2	$11\frac{5}{8}$	9	$7\frac{7}{8}$
1	$11\frac{3}{4}$	6	$6\frac{1}{2}$	2	$3\frac{3}{4}$	7	7	2	$7\frac{3}{4}$	8	$7\frac{5}{8}$	2	$11\frac{3}{4}$	9	$8\frac{1}{4}$
1	$11\frac{7}{8}$	6	$6\frac{7}{8}$	2	$3\frac{7}{8}$	7	$7\frac{1}{2}$	2	$7\frac{7}{8}$	8	8	2	$11\frac{7}{8}$	9	$8\frac{5}{8}$
2	0	6	$7\frac{1}{4}$	2	4	7	$7\frac{7}{8}$	2	8	8	$8\frac{3}{8}$	3	0	9	9
2	$0\frac{1}{8}$	6	$7\frac{5}{8}$	2	$4\frac{1}{8}$	7	$8\frac{1}{4}$	2	$8\frac{1}{8}$	8	$8\frac{7}{8}$	3	$0\frac{1}{8}$	9	$9\frac{3}{8}$
2	$0\frac{1}{4}$	6	$8\frac{1}{8}$	2	$4\frac{1}{4}$	7	$8\frac{5}{8}$	2	$8\frac{1}{4}$	8	$9\frac{1}{4}$	3	$0\frac{1}{4}$	9	$9\frac{3}{4}$
2	$0\frac{3}{8}$	6	$8\frac{1}{2}$	2	$4\frac{3}{8}$	7	9	2	$8\frac{3}{8}$	8	$9\frac{5}{8}$	3	$0\frac{3}{8}$	9	$10\frac{1}{8}$
2	$0\frac{1}{2}$	6	$8\frac{7}{8}$	2	$4\frac{1}{2}$	7	$9\frac{3}{8}$	2	$8\frac{1}{2}$	8	10	3	$0\frac{1}{2}$	9	$10\frac{1}{2}$
2	$0\frac{5}{8}$	6	$9\frac{1}{4}$	2	$4\frac{5}{8}$	7	$9\frac{3}{4}$	2	$8\frac{5}{8}$	8	$10\frac{3}{8}$	3	$0\frac{5}{8}$	9	$10\frac{7}{8}$
2	$0\frac{3}{4}$	6	$9\frac{5}{8}$	2	$4\frac{3}{4}$	7	$10\frac{1}{4}$	2	$8\frac{3}{4}$	8	$10\frac{3}{4}$	3	$0\frac{3}{4}$	9	$11\frac{3}{8}$
2	$0\frac{7}{8}$	6	10	2	$4\frac{7}{8}$	7	$10\frac{5}{8}$	2	$8\frac{7}{8}$	8	$11\frac{1}{8}$	3	$0\frac{7}{8}$	9	$11\frac{3}{4}$
2	1	6	$10\frac{1}{2}$	2	5	7	11	2	9	8	$11\frac{1}{2}$	3	1	10	$0\frac{1}{8}$
2	$1\frac{1}{8}$	6	$10\frac{7}{8}$	2	$5\frac{1}{8}$	7	$11\frac{3}{8}$	2	$9\frac{1}{8}$	9	0	3	$1\frac{1}{8}$	10	$0\frac{1}{2}$
2	$1\frac{1}{4}$	6	$11\frac{1}{4}$	2	$5\frac{1}{4}$	7	$11\frac{3}{4}$	2	$9\frac{1}{4}$	9	$0\frac{3}{8}$	3	$1\frac{1}{4}$	10	$0\frac{7}{8}$
2	$1\frac{3}{8}$	6	$11\frac{5}{8}$	2	$5\frac{3}{8}$	8	$0\frac{1}{8}$	2	$9\frac{3}{8}$	9	$0\frac{3}{4}$	3	$1\frac{3}{8}$	10	$1\frac{3}{8}$
2	$1\frac{1}{2}$	7	0	2	$5\frac{1}{2}$	8	$0\frac{1}{2}$	2	$9\frac{1}{2}$	9	$1\frac{1}{8}$	3	$1\frac{1}{2}$	10	$1\frac{3}{4}$
2	$1\frac{5}{8}$	7	$0\frac{3}{8}$	2	$5\frac{5}{8}$	8	1	2	$9\frac{5}{8}$	9	$1\frac{1}{2}$	3	$1\frac{5}{8}$	10	$2\frac{1}{8}$
2	$1\frac{3}{4}$	7	$0\frac{3}{4}$	2	$5\frac{3}{4}$	8	$1\frac{3}{8}$	2	$9\frac{3}{4}$	9	$1\frac{7}{8}$	3	$1\frac{3}{4}$	10	$2\frac{1}{2}$
2	$1\frac{7}{8}$	7	$1\frac{1}{8}$	2	$5\frac{7}{8}$	8	$1\frac{3}{4}$	2	$9\frac{7}{8}$	9	$2\frac{3}{8}$	3	$1\frac{7}{8}$	10	$2\frac{7}{8}$

or ANGLE IRON measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
3	2	10	3¼	3	6	11	3⅞	3	10	12	4⅜	4	2	13	5
3	2⅛	10	3⅝	3	6⅛	11	4¼	3	10⅛	12	4¾	4	2⅛	13	5⅜
3	2¼	10	4	3	6¼	11	4⅝	3	10¼	12	5¼	4	2¼	13	5¾
3	2⅜	10	4½	3	6⅜	11	5	3	10⅜	12	5⅝	4	2⅜	13	6⅛
3	2½	10	4⅞	3	6½	11	5⅜	3	10½	12	6	4	2½	13	6½
3	2⅝	10	5¼	3	6⅝	11	5¾	3	10⅝	12	6⅜	4	2⅝	13	7
3	2¾	10	5⅝	3	6¾	11	6¼	3	10¾	12	6¾	4	2¾	13	7⅜
3	2⅞	10	6	3	6⅞	11	6⅝	3	10⅞	12	7⅛	4	2⅞	13	7¾
3	3	10	6⅜	3	7	11	7	3	11	12	7½	4	3	13	8⅛
3	3⅛	10	6⅞	3	7⅛	11	7⅜	3	11⅛	12	7⅞	4	3⅛	13	8½
3	3¼	10	7¼	3	7¼	11	7¾	3	11¼	12	8⅜	4	3¼	13	8⅞
3	3⅜	10	7⅝	3	7⅜	11	8⅛	3	11⅜	12	8¾	4	3⅜	13	9¼
3	3½	10	8	3	7½	11	8½	3	11½	12	9⅛	4	3½	13	9⅝
3	3⅝	10	8⅜	3	7⅝	11	8⅞	3	11⅝	12	9½	4	3⅝	13	10⅛
3	3¾	10	8¾	3	7¾	11	9⅜	3	11¾	12	9⅞	4	3¾	13	10½
3	3⅞	10	9⅛	3	7⅞	11	9¾	3	11⅞	12	10⅜	4	3⅞	13	10⅞
3	4	10	9½	3	8	11	10⅛	4	0	12	10¾	4	4	13	11¼
3	4⅛	10	9⅞	3	8⅛	11	10½	4	0⅛	12	11⅛	4	4⅛	13	11⅝
3	4¼	10	10⅜	3	8¼	11	10⅞	4	0¼	12	11½	4	4¼	14	0
3	4⅜	10	10¾	3	8⅜	11	11¼	4	0⅜	12	11⅞	4	4⅜	14	0⅜
3	4½	10	11⅛	3	8½	11	11⅝	4	0½	13	0¼	4	4½	14	0⅞
3	4⅝	10	11½	3	8⅝	12	0⅛	4	0⅝	13	0⅝	4	4⅝	14	1¼
3	4¾	10	11⅞	3	8¾	12	0½	4	0¾	13	1	4	4¾	14	1⅝
3	4⅞	11	0⅜	3	8⅞	12	0⅞	4	0⅞	13	1½	4	4⅞	14	2
3	5	11	0¾	3	9	12	1¼	4	1	13	1⅞	4	5	14	2⅜
3	5⅛	11	1⅛	3	9⅛	12	1⅝	4	1⅛	13	2¼	4	5⅛	14	2¾
3	5¼	11	1½	3	9¼	12	2	4	1¼	13	2⅝	4	5¼	14	3⅛
3	5⅜	11	1⅞	3	9⅜	12	2⅜	4	1⅜	13	3	4	5⅜	14	3½
3	5½	11	2¼	3	9½	12	2⅞	4	1½	13	3⅜	4	5½	14	4
3	5⅝	11	2⅝	3	9⅝	12	3¼	4	1⅝	13	3¾	4	5⅝	14	4⅜
3	5¾	11	3	3	9¾	12	3⅝	4	1¾	13	4¼	4	5¾	14	4¾
3	5⅞	11	3½	3	9⅞	12	4	4	1⅞	13	4⅝	4	5⅞	14	5⅛

For ANGLE IRON measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
4	6	14	5½	4	10	15	6⅛	5	2	16	6⅝	5	6	17	7¼
4	6⅛	14	5⅞	4	10⅛	15	6¼	5	2⅛	16	7	5	6⅛	17	7⅜
4	6¼	14	6⅜	4	10¼	15	6⅞	5	2¼	16	7½	5	6¼	17	8
4	6⅜	14	6¾	4	10⅜	15	7¼	5	2⅜	16	7⅞	5	6⅜	17	8⅜
4	6½	14	7⅛	4	10½	15	7¾	5	2½	16	8¼	5	6½	17	8⅞
4	6⅝	14	7½	4	10⅝	15	8⅛	5	2⅝	16	8⅝	5	6⅝	17	9¼
4	6¾	14	7⅞	4	10¾	15	8½	5	2¾	16	9	5	6¾	17	9⅜
4	6⅞	14	8¼	4	10⅞	15	8⅞	5	2⅞	16	9⅜	5	6⅞	17	10
4	7	14	8¾	4	11	15	9¼	5	3	16	9⅞	5	7	17	10⅜
4	7⅛	14	9⅛	4	11⅛	15	9⅝	5	3⅛	16	10¼	5	7⅛	17	10¾
4	7¼	14	9½	4	11¼	15	10	5	3¼	16	10⅝	5	7¼	17	11⅛
4	7⅜	14	9⅞	4	11⅜	15	10⅜	5	3⅜	16	11	5	7⅜	17	11½
4	7½	14	10¼	4	11½	15	10⅞	5	3½	16	11⅜	5	7½	18	0
4	7⅝	14	10⅝	4	11⅝	15	11¼	5	3⅝	16	11¾	5	7⅝	18	0⅜
4	7¾	14	11	4	11¾	15	11⅝	5	3¾	17	0⅛	5	7¾	18	0¾
4	7⅞	14	11½	4	11⅞	16	0	5	3⅞	17	0⅝	5	7⅞	18	1⅛
4	8	14	11⅞	5	0	16	0⅜	5	4	17	1	5	8	18	1½
4	8⅛	15	0¼	5	0⅛	16	0¾	5	4⅛	17	1⅜	5	8⅛	18	1⅞
4	8¼	15	0⅝	5	0¼	16	1⅛	5	4¼	17	1¾	5	8¼	18	2⅜
4	8⅜	15	1	5	0⅜	16	1⅝	5	4⅜	17	2⅛	5	8⅜	18	2¾
4	8½	15	1⅜	5	0½	16	2	5	4½	17	2½	5	8½	18	3⅛
4	8⅝	15	1⅞	5	0⅝	16	2⅜	5	4⅝	17	2⅞	5	8⅝	18	3½
4	8¾	15	2¼	5	0¾	16	2¾	5	4¾	17	3⅜	5	8¾	18	3⅞
4	8⅞	15	2⅝	5	0⅞	16	3⅛	5	4⅞	17	3¾	5	8⅞	18	4¼
4	9	15	3	5	1	16	3½	5	5	17	4⅛	5	9	18	4⅝
4	9⅛	15	3⅜	5	1⅛	16	3⅞	5	5⅛	17	4½	5	9⅛	18	5
4	9¼	15	3¾	5	1¼	16	4⅜	5	5¼	17	4⅞	5	9¼	18	5½
4	9⅜	15	4⅛	5	1⅜	16	4¾	5	5⅜	17	5¼	5	9⅜	18	5⅞
4	9½	15	4½	5	1½	16	5⅛	5	5½	17	5⅝	5	9½	18	6¼
4	9⅝	15	4⅞	5	1⅝	16	5½	5	5⅝	17	6	5	9⅝	18	6⅝
4	9¾	15	5⅜	5	1¾	16	5⅞	5	5¾	17	6½	5	9¾	18	7
4	9⅞	15	5¾	5	1⅞	16	6¼	5	5⅞	17	6⅞	5	9⅞	18	7⅜

or ANGLE IRON measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
5	10	18	7 7/8	6	2	19	8 3/8	6	6	20	9	6	10	21	9 1/2
5	10 1/8	18	8 1/4	6	2 1/8	19	8 3/4	6	6 1/8	20	9 3/8	6	10 1/8	21	9 7/8
5	10 1/4	18	8 5/8	6	2 1/4	19	9 1/8	6	6 1/4	20	9 3/4	6	10 1/4	21	10 3/8
5	10 3/8	18	9	6	2 3/8	19	9 5/8	6	6 3/8	20	10 1/8	6	10 3/8	21	10 3/4
5	10 1/2	18	9 3/8	6	2 1/2	19	10	6	6 1/2	20	10 1/2	6	10 1/2	21	11 1/8
5	10 5/8	18	9 3/4	6	2 5/8	19	10 3/8	6	6 5/8	20	10 7/8	6	10 5/8	21	11 1/2
5	10 3/4	18	10 1/8	6	2 3/4	19	10 3/4	6	6 3/4	20	11 3/8	6	10 3/4	21	11 7/8
5	10 7/8	18	10 1/2	6	2 7/8	19	11 1/8	6	6 7/8	20	11 3/4	6	10 7/8	22	0 1/4
5	11	18	11	6	3	19	11 1/2	6	7	21	0 1/8	6	11	22	0 5/8
5	11 1/8	18	11 3/8	6	3 1/8	19	11 7/8	6	7 1/8	21	0 1/2	6	11 1/8	22	1
5	11 1/4	18	11 3/4	6	3 1/4	20	0 3/8	6	7 1/4	21	0 7/8	6	11 1/4	22	1 1/2
5	11 3/8	19	0 1/8	6	3 3/8	20	0 3/4	6	7 3/8	21	1 1/4	6	11 3/8	22	1 7/8
5	11 1/2	19	0 1/2	6	3 1/2	20	1 1/8	6	7 1/2	21	1 5/8	6	11 1/2	22	2 1/4
5	11 5/8	19	0 7/8	6	3 5/8	20	1 1/2	6	7 5/8	21	2	6	11 5/8	22	2 5/8
5	11 3/4	19	1 3/8	6	3 3/4	20	1 7/8	6	7 3/4	21	2 1/2	6	11 3/4	22	3
5	11 7/8	19	1 3/4	6	3 7/8	20	2 1/4	6	7 7/8	21	2 7/8	6	11 7/8	22	3 3/8
6	0	19	2 1/8	6	4	20	2 5/8	6	8	21	3 1/4	7	0	22	3 7/8
6	0 1/8	19	2 1/2	6	4 1/8	20	3	6	8 1/8	21	3 5/8	7	0 1/8	22	4 1/4
6	0 1/4	19	2 7/8	6	4 1/4	20	3 1/2	6	8 1/4	21	4	7	0 1/4	22	4 5/8
6	0 3/8	19	3 1/4	6	4 3/8	20	3 7/8	6	8 3/8	21	4 3/8	7	0 3/8	22	5
6	0 1/2	19	3 5/8	6	4 1/2	20	4 1/4	6	8 1/2	21	4 3/4	7	0 1/2	22	5 3/8
6	0 5/8	19	4	6	4 5/8	20	4 5/8	6	8 5/8	21	5 1/8	7	0 5/8	22	5 3/4
6	0 3/4	19	4 1/2	6	4 3/4	20	5	6	8 3/4	21	5 1/2	7	0 3/4	22	6 1/8
6	0 7/8	19	4 7/8	6	4 7/8	20	5 3/8	6	8 7/8	21	6	7	0 7/8	22	6 1/2
6	1	19	5 1/4	6	5	20	5 7/8	6	9	21	6 3/8	7	1	22	7
6	1 1/8	19	5 5/8	6	5 1/8	20	6 1/4	6	9 1/8	21	6 3/4	7	1 1/8	22	7 3/8
6	1 1/4	19	6	6	5 1/4	20	6 5/8	6	9 1/4	21	7 1/8	7	1 1/4	22	7 3/4
6	1 3/8	19	6 3/8	6	5 3/8	20	7	6	9 3/8	21	7 5/8	7	1 3/8	22	8 1/8
6	1 1/2	19	6 7/8	6	5 1/2	20	7 3/8	6	9 1/2	21	8	7	1 1/2	22	8 1/2
6	1 5/8	19	7 1/4	6	5 5/8	20	7 3/4	6	9 5/8	21	8 3/8	7	1 5/8	22	8 7/8
6	1 3/4	19	7 5/8	6	5 3/4	20	8 1/8	6	9 3/4	21	8 3/4	7	1 3/4	22	9 1/4
6	1 7/8	19	8	6	5 7/8	20	8 1/2	6	9 7/8	21	9 1/8	7	1 7/8	22	9 3/4

For Angle Iron measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
7	2	22	$10\frac{1}{8}$	7	6	23	$10\frac{5}{8}$	7	10	24	$11\frac{1}{4}$	8	2	25	$11\frac{3}{4}$
7	$2\frac{1}{8}$	22	$10\frac{1}{2}$	7	$6\frac{1}{8}$	23	11	7	$10\frac{1}{8}$	24	$11\frac{5}{8}$	8	$2\frac{1}{8}$	26	$0\frac{1}{8}$
7	$2\frac{1}{4}$	22	$10\frac{7}{8}$	7	$6\frac{1}{4}$	23	$11\frac{1}{2}$	7	$10\frac{1}{4}$	25	0	8	$2\frac{1}{4}$	26	$0\frac{5}{8}$
7	$2\frac{3}{8}$	22	$11\frac{1}{4}$	7	$6\frac{3}{8}$	23	$11\frac{7}{8}$	7	$10\frac{3}{8}$	25	$0\frac{3}{8}$	8	$2\frac{3}{8}$	26	1
7	$2\frac{1}{2}$	22	$11\frac{5}{8}$	7	$6\frac{1}{2}$	24	$0\frac{1}{8}$	7	$10\frac{1}{2}$	25	$0\frac{3}{4}$	8	$2\frac{1}{2}$	26	$1\frac{3}{8}$
7	$2\frac{5}{8}$	23	0	7	$6\frac{5}{8}$	24	$0\frac{5}{8}$	7	$10\frac{5}{8}$	25	$1\frac{1}{4}$	8	$2\frac{5}{8}$	26	$1\frac{3}{4}$
7	$2\frac{3}{4}$	23	$0\frac{1}{2}$	7	$6\frac{3}{4}$	24	1	7	$10\frac{3}{4}$	25	$1\frac{5}{8}$	8	$2\frac{3}{4}$	26	$2\frac{1}{8}$
7	$2\frac{7}{8}$	23	$0\frac{7}{8}$	7	$6\frac{7}{8}$	24	$1\frac{3}{8}$	7	$10\frac{7}{8}$	25	2	8	$2\frac{7}{8}$	26	$2\frac{1}{2}$
7	3	23	$1\frac{1}{4}$	7	7	24	$1\frac{3}{4}$	7	11	25	$2\frac{3}{8}$	8	3	26	$2\frac{7}{8}$
7	$3\frac{1}{8}$	23	$1\frac{5}{8}$	7	$7\frac{1}{8}$	24	$2\frac{1}{4}$	7	$11\frac{1}{8}$	25	$2\frac{3}{4}$	8	$3\frac{1}{8}$	26	$3\frac{3}{8}$
7	$3\frac{1}{4}$	23	2	7	$7\frac{1}{4}$	24	$2\frac{5}{8}$	7	$11\frac{1}{4}$	25	$3\frac{1}{8}$	8	$3\frac{1}{4}$	26	$3\frac{3}{4}$
7	$3\frac{3}{8}$	23	$2\frac{3}{8}$	7	$7\frac{3}{8}$	24	3	7	$11\frac{3}{8}$	25	$3\frac{1}{2}$	8	$3\frac{3}{8}$	26	$4\frac{1}{8}$
7	$3\frac{1}{2}$	23	$2\frac{3}{4}$	7	$7\frac{1}{2}$	24	$3\frac{3}{8}$	7	$11\frac{1}{2}$	25	$3\frac{7}{8}$	8	$3\frac{1}{2}$	26	$4\frac{1}{2}$
7	$3\frac{5}{8}$	23	$3\frac{1}{4}$	7	$7\frac{5}{8}$	24	$3\frac{3}{4}$	7	$11\frac{5}{8}$	25	$4\frac{3}{8}$	8	$3\frac{5}{8}$	26	$4\frac{7}{8}$
7	$3\frac{3}{4}$	23	$3\frac{5}{8}$	7	$7\frac{3}{4}$	24	$4\frac{1}{8}$	7	$11\frac{3}{4}$	25	$4\frac{3}{4}$	8	$3\frac{3}{4}$	26	$5\frac{1}{4}$
7	$3\frac{7}{8}$	23	4	7	$7\frac{7}{8}$	24	$4\frac{1}{2}$	7	$11\frac{7}{8}$	25	$5\frac{1}{8}$	8	$3\frac{7}{8}$	26	$5\frac{5}{8}$
7	4	23	$4\frac{3}{8}$	7	8	24	$4\frac{7}{8}$	8	0	25	$5\frac{1}{2}$	8	4	26	6
7	$4\frac{1}{8}$	23	$4\frac{3}{4}$	7	$8\frac{1}{8}$	24	$5\frac{3}{8}$	8	$0\frac{1}{8}$	25	$5\frac{7}{8}$	8	$4\frac{1}{8}$	26	$6\frac{1}{2}$
7	$4\frac{1}{4}$	23	$5\frac{1}{8}$	7	$8\frac{1}{4}$	24	$5\frac{3}{4}$	8	$0\frac{1}{4}$	25	$6\frac{1}{4}$	8	$4\frac{1}{4}$	26	$6\frac{7}{8}$
7	$4\frac{3}{8}$	23	$5\frac{1}{2}$	7	$8\frac{3}{8}$	24	$6\frac{1}{8}$	8	$0\frac{3}{8}$	25	$6\frac{5}{8}$	8	$4\frac{3}{8}$	26	$7\frac{1}{4}$
7	$4\frac{1}{2}$	23	6	7	$8\frac{1}{2}$	24	$6\frac{1}{2}$	8	$0\frac{1}{2}$	25	7	8	$4\frac{1}{2}$	26	$7\frac{5}{8}$
7	$4\frac{5}{8}$	23	$6\frac{3}{8}$	7	$8\frac{5}{8}$	24	$6\frac{7}{8}$	8	$0\frac{5}{8}$	25	$7\frac{1}{2}$	8	$4\frac{5}{8}$	26	8
7	$4\frac{3}{4}$	23	$6\frac{3}{4}$	7	$8\frac{3}{4}$	24	$7\frac{1}{4}$	8	$0\frac{3}{4}$	25	$7\frac{7}{8}$	8	$4\frac{3}{4}$	26	$8\frac{3}{8}$
7	$4\frac{7}{8}$	23	$7\frac{1}{8}$	7	$8\frac{7}{8}$	24	$7\frac{5}{8}$	8	$0\frac{7}{8}$	25	$8\frac{1}{4}$	8	$4\frac{7}{8}$	26	$8\frac{7}{8}$
7	5	23	$7\frac{1}{2}$	7	9	24	8	8	1	25	$8\frac{5}{8}$	8	5	26	$9\frac{1}{4}$
7	$5\frac{1}{8}$	23	$7\frac{7}{8}$	7	$9\frac{1}{8}$	24	$8\frac{1}{2}$	8	$1\frac{1}{8}$	25	9	8	$5\frac{1}{8}$	26	$9\frac{5}{8}$
7	$5\frac{1}{4}$	23	$8\frac{1}{4}$	7	$9\frac{1}{4}$	24	$8\frac{7}{8}$	8	$1\frac{1}{4}$	25	$9\frac{1}{2}$	8	$5\frac{1}{4}$	26	10
7	$5\frac{3}{8}$	23	$8\frac{3}{4}$	7	$9\frac{3}{8}$	24	$9\frac{1}{4}$	8	$1\frac{3}{8}$	25	$9\frac{7}{8}$	8	$5\frac{3}{8}$	26	$10\frac{3}{8}$
7	$5\frac{1}{2}$	23	$9\frac{1}{8}$	7	$9\frac{1}{2}$	24	$9\frac{5}{8}$	8	$1\frac{1}{2}$	25	$10\frac{1}{4}$	8	$5\frac{1}{2}$	26	$10\frac{3}{4}$
7	$5\frac{5}{8}$	23	$9\frac{1}{2}$	7	$9\frac{5}{8}$	24	10	8	$1\frac{5}{8}$	25	$10\frac{3}{8}$	8	$5\frac{5}{8}$	26	$11\frac{1}{8}$
7	$5\frac{3}{4}$	23	$9\frac{7}{8}$	7	$9\frac{3}{4}$	24	$10\frac{1}{2}$	8	$1\frac{3}{4}$	25	11	8	$5\frac{3}{4}$	26	$11\frac{1}{2}$
7	$5\frac{7}{8}$	23	$10\frac{1}{4}$	7	$9\frac{7}{8}$	24	$10\frac{7}{8}$	8	$1\frac{7}{8}$	25	$11\frac{3}{8}$	8	$5\frac{7}{8}$	27	0

TABLE V.,

or ANGLE IRON measuring ¼ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
0	9	2	9	1	1	3	9½	1	5	4	10⅛	1	9	5	10⅝
0	9⅛	2	9⅜	1	1⅛	3	9⅞	1	5⅛	4	10½	1	9⅛	5	11
0	9¼	2	9¾	1	1¼	3	10⅜	1	5¼	4	10⅞	1	9¼	5	11½
0	9⅜	2	10⅛	1	1⅜	3	10¾	1	5⅜	4	11¼	1	9⅜	5	11⅞
0	9½	2	10½	1	1½	3	11⅛	1	5½	4	11⅝	1	9½	6	0¼
0	9⅝	2	10⅞	1	1⅝	3	11½	1	5⅝	5	0	1	9⅝	6	0⅝
0	9¾	2	11⅜	1	1¾	3	11⅞	1	5¾	5	0⅜	1	9¾	6	1
0	9⅞	2	11¾	1	1⅞	4	0¼	1	5⅞	5	0⅞	1	9⅞	6	1⅜
0	10	3	0⅛	1	2	4	0⅝	1	6	5	1¼	1	10	6	1¾
0	10⅛	3	0½	1	2⅛	4	1	1	6⅛	5	1⅝	1	10⅛	6	2¼
0	10¼	3	0⅞	1	2¼	4	1⅜	1	6¼	5	2	1	10¼	6	2⅝
0	10⅜	3	1¼	1	2⅜	4	1⅞	1	6⅜	5	2⅜	1	10⅜	6	3
0	10½	3	1⅝	1	2½	4	2¼	1	6½	5	2¾	1	10½	6	3⅜
0	10⅝	3	2	1	2⅝	4	2⅝	1	6⅝	5	3⅛	1	10⅝	6	3¾
0	10¾	3	2⅓	1	2¾	4	3	1	6¾	5	3⅝	1	10¾	6	4⅛
0	10⅞	3	2⅞	1	2⅞	4	3⅜	1	6⅞	5	4	1	10⅞	6	4½
0	11	3	3¼	1	3	4	3¾	1	7	5	4⅜	1	11	6	4⅞
0	11⅛	3	3⅜	1	3⅛	4	4⅛	1	7⅛	5	4¾	1	11⅛	6	5⅜
0	11¼	3	4	1	3¼	4	4½	1	7¼	5	5⅛	1	11¼	6	5¾
0	11⅜	3	4⅜	1	3⅜	4	5	1	7⅜	5	5½	1	11⅜	6	6⅛
0	11½	3	4⅞	1	3½	4	5⅜	1	7½	5	5⅞	1	11½	6	6½
0	11⅝	3	5¼	1	3⅝	4	5¾	1	7⅝	5	6⅜	1	11⅝	6	6⅞
0	11¾	3	5⅝	1	3¾	4	6⅛	1	7¾	5	6¾	1	11¾	6	7¼
0	11⅞	3	6	1	3⅞	4	6½	1	7⅞	5	7⅛	1	11⅞	6	7⅝
1	0	3	6⅜	1	4	4	7	1	8	5	7½	2	0	6	8⅛
1	0⅛	3	6¾	1	4⅛	4	7⅜	1	8⅛	5	8	2	0⅛	6	8½
1	0¼	3	7⅛	1	4¼	4	7¾	1	8¼	5	8⅜	2	0¼	6	8⅞
1	0⅜	3	7⅝	1	4⅜	4	8⅛	1	8⅜	5	8¾	2	0⅜	6	9¼
1	0½	3	8	1	4½	4	8½	1	8½	5	9⅛	2	0½	6	9⅝
1	0⅝	3	8⅜	1	4⅝	4	8⅞	1	8⅝	5	9½	2	0⅝	6	10
1	0¾	3	8¾	1	4¾	4	9¼	1	8¾	5	9⅞	2	0¾	6	10½
1	0⅞	3	9⅛	1	4⅞	4	9⅝	1	8⅞	5	10¼	2	0⅞	6	10⅞

For Angle Iron measuring ¼ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
2	1	6	11¼	2	5	7	11¾	2	9	9	0⅜	3	1	10	0⅞
2	1⅛	6	11⅝	2	5⅛	8	0⅛	2	9⅛	9	0¾	3	1⅛	10	1⅜
2	1¼	7	0	2	5¼	8	0½	2	9¼	9	1⅛	3	1¼	10	1¾
2	1⅜	7	0⅜	2	5⅜	8	1	2	9⅜	9	1½	3	1⅜	10	2⅛
2	1½	7	0¾	2	5½	8	1⅜	2	9½	9	1⅞	3	1½	10	2½
2	1⅝	7	1⅛	2	5⅝	8	1¾	2	9⅝	9	2⅜	3	1⅝	10	2⅞
2	1¾	7	1½	2	5¾	8	2⅛	2	9¾	9	2¾	3	1¾	10	3¼
2	1⅞	7	2	2	5⅞	8	2½	2	9⅞	9	3⅛	3	1⅞	10	3⅝
2	2	7	2⅜	2	6	8	2⅞	2	10	9	3½	3	2	10	4
2	2⅛	7	2¾	2	6⅛	8	3⅜	2	10⅛	9	3⅞	3	2⅛	10	4½
2	2¼	7	3⅛	2	6¼	8	3¾	2	10¼	9	4¼	3	2¼	10	4⅞
2	2⅜	7	3½	2	6⅜	8	4⅛	2	10⅜	9	4⅝	3	2⅜	10	5¼
2	2½	7	3⅞	2	6½	8	4½	2	10½	9	5	3	2½	10	5⅝
2	2⅝	7	4⅜	2	6⅝	8	4⅞	2	10⅝	9	5½	3	2⅝	10	6
2	2¾	7	4¾	2	6¾	8	5¼	2	10¾	9	5⅞	3	2¾	10	6⅜
2	2⅞	7	5⅛	2	6⅞	8	5⅝	2	10⅞	9	6¼	3	2⅞	10	6⅞
2	3	7	5½	2	7	8	6	2	11	9	6⅝	3	3	10	7¼
2	3⅛	7	5⅞	2	7⅛	8	6½	2	11⅛	9	7	3	3⅛	10	7⅝
2	3¼	7	6¼	2	7¼	8	6⅞	2	11¼	9	7⅜	3	3¼	10	8
2	3⅜	7	6⅝	2	7⅜	8	7¼	2	11⅜	9	7⅞	3	3⅜	10	8⅜
2	3½	7	7	2	7½	8	7⅝	2	11½	9	8¼	3	3½	10	8¾
2	3⅝	7	7⅜	2	7⅝	8	8	2	11⅝	9	8⅝	3	3⅝	10	9⅛
2	3¾	7	7⅞	2	7¾	8	8⅜	2	11¾	9	9	3	3¾	10	9½
2	3⅞	7	8¼	2	7⅞	8	8⅞	2	11⅞	9	9⅜	3	3⅞	10	9⅞
2	4	7	8⅝	2	8	8	9¼	3	0	9	9¾	3	4	10	10⅜
2	4⅛	7	9	2	8⅛	8	9⅝	3	0⅛	9	10⅛	3	4⅛	10	10¾
2	4¼	7	9⅜	2	8¼	8	10	3	0¼	9	10½	3	4¼	10	11⅛
2	4⅜	7	9¾	2	8⅜	8	10⅜	3	0⅜	9	10⅞	3	4⅜	10	11½
2	4½	7	10¼	2	8½	8	10¾	3	0½	9	11⅜	3	4½	10	11⅞
2	4⅝	7	10⅝	2	8⅝	8	11⅛	3	0⅝	9	11¾	3	4⅝	11	0⅜
2	4¾	7	11	2	8¾	8	11½	3	0¾	10	0⅛	3	4¾	11	0¾
2	4⅞	7	11⅜	2	8⅞	9	0	3	0⅞	10	0½	3	4⅞	11	1⅛

'or ANGLE IRON measuring $\frac{3}{4}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.
3	5	11	1½	3	9	12	2	4	1	13	2⅝	4	5	14	3⅛
3	5⅛	11	1⅞	3	9⅛	12	2⅜	4	1⅛	13	3	4	5⅛	14	3½
3	5¼	11	2¼	3	9¼	12	2⅞	4	1¼	13	3⅜	4	5¼	14	4
3	5⅜	11	2⅝	3	9⅜	12	3¼	4	1⅜	13	3¾	4	5⅜	14	4⅜
3	5½	11	3	3	9½	12	3⅝	4	1½	13	4¼	4	5½	14	4¾
3	5⅝	11	3½	3	9⅝	12	4	4	1⅝	13	4⅝	4	5⅝	14	5⅛
3	5¾	11	3⅞	3	9¾	12	4⅜	4	1¾	13	5	4	5¾	14	5½
3	5⅞	11	4¼	3	9⅞	12	4¾	4	1⅞	13	5⅜	4	5⅞	14	5⅞
3	6	11	4⅝	3	10	12	5¼	4	2	13	5¾	4	6	14	6⅜
3	6⅛	11	5	3	10⅛	12	5⅝	4	2⅛	13	6⅛	4	6⅛	14	6¾
3	6¼	11	5⅜	3	10¼	12	6	4	2¼	13	6½	4	6¼	14	7⅛
3	6⅜	11	5¾	3	10⅜	12	6⅜	4	2⅜	13	7	4	6⅜	14	7½
3	6½	11	6¼	3	10½	12	6¾	4	2½	13	7⅜	4	6½	14	7⅞
3	6⅝	11	6⅝	3	10⅝	12	7⅛	4	2⅝	13	7¾	4	6⅝	14	8¼
3	6¾	11	7	3	10¾	12	7½	4	2¾	13	8⅛	4	6¾	14	8¾
3	6⅞	11	7⅜	3	10⅞	12	7⅞	4	2⅞	13	8½	4	6⅞	14	9⅛
3	7	11	7¾	3	11	12	8⅜	4	3	13	8⅞	4	7	14	9½
3	7⅛	11	8⅛	3	11⅛	12	8¾	4	3⅛	13	9¼	4	7⅛	14	9⅞
3	7¼	11	8½	3	11¼	12	9⅛	4	3¼	13	9⅝	4	7¼	14	10¼
3	7⅜	11	8⅞	3	11⅜	12	9½	4	3⅜	13	10⅛	4	7⅜	14	10⅝
3	7½	11	9⅜	3	11½	12	9⅞	4	3½	13	10½	4	7½	14	11
3	7⅝	11	9¾	3	11⅝	12	10⅜	4	3⅝	13	10⅞	4	7⅝	14	11½
3	7¾	11	10⅛	3	11¾	12	10¾	4	3¾	13	11¼	4	7¾	14	11⅞
3	7⅞	11	10½	3	11⅞	12	11⅛	4	3⅞	13	11⅝	4	7⅞	15	0¼
3	8	11	10⅞	4	0	12	11½	4	4	14	0	4	8	15	0⅝
3	8⅛	11	11¼	4	0⅛	12	11⅞	4	4⅛	14	0⅜	4	8⅛	15	1
3	8¼	11	11⅝	4	0¼	13	0¼	4	4¼	14	0⅞	4	8¼	15	1⅜
3	8⅜	12	0⅛	4	0⅜	13	0⅝	4	4⅜	14	1¼	4	8⅜	15	1⅞
3	8½	12	0½	4	0½	13	1	4	4½	14	1⅝	4	8½	15	2¼
3	8⅝	12	0⅞	4	0⅝	13	1½	4	4⅝	14	2	4	8⅝	15	2⅝
3	8¾	12	1¼	4	0¾	13	1⅞	4	4¾	14	2⅜	4	8¾	15	3
3	8⅞	12	1⅝	4	0⅞	13	2¼	4	4⅞	14	2¾	4	8⅞	15	3⅜

For Angle Iron measuring $\frac{3}{4}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
4	9	15	$3\frac{3}{4}$	5	1	16	$4\frac{3}{8}$	5	5	17	$4\frac{7}{8}$	5	9	18	$5\frac{1}{2}$
4	$9\frac{1}{8}$	15	$4\frac{1}{8}$	5	$1\frac{1}{8}$	16	$4\frac{3}{4}$	5	$5\frac{1}{8}$	17	$5\frac{1}{4}$	5	$9\frac{1}{8}$	18	$5\frac{7}{8}$
4	$9\frac{1}{4}$	15	$4\frac{1}{4}$	5	$1\frac{1}{4}$	16	$5\frac{1}{8}$	5	$5\frac{1}{4}$	17	$5\frac{5}{8}$	5	$9\frac{1}{4}$	18	$6\frac{1}{4}$
4	$9\frac{3}{8}$	15	$4\frac{7}{8}$	5	$1\frac{3}{8}$	16	$5\frac{1}{2}$	5	$5\frac{3}{8}$	17	6	5	$9\frac{3}{8}$	18	$6\frac{5}{8}$
4	$9\frac{1}{2}$	15	$5\frac{3}{8}$	5	$1\frac{1}{2}$	16	$5\frac{7}{8}$	5	$5\frac{1}{2}$	17	$6\frac{1}{8}$	5	$9\frac{1}{2}$	18	7
4	$9\frac{5}{8}$	15	$5\frac{3}{4}$	5	$1\frac{5}{8}$	16	$6\frac{1}{4}$	5	$5\frac{5}{8}$	17	$6\frac{7}{8}$	5	$9\frac{5}{8}$	18	$7\frac{3}{8}$
4	$9\frac{3}{4}$	15	$6\frac{1}{8}$	5	$1\frac{3}{4}$	16	$6\frac{5}{8}$	5	$5\frac{3}{4}$	17	$7\frac{1}{4}$	5	$9\frac{3}{4}$	18	$7\frac{7}{8}$
4	$9\frac{7}{8}$	15	$6\frac{1}{2}$	5	$1\frac{7}{8}$	16	7	5	$5\frac{7}{8}$	17	$7\frac{5}{8}$	5	$9\frac{7}{8}$	18	$8\frac{1}{4}$
4	10	15	$6\frac{7}{8}$	5	2	16	$7\frac{1}{2}$	5	6	17	8	5	10	18	$8\frac{5}{8}$
4	$10\frac{1}{8}$	15	$7\frac{1}{4}$	5	$2\frac{1}{8}$	16	$7\frac{7}{8}$	5	$6\frac{1}{8}$	17	$8\frac{3}{8}$	5	$10\frac{1}{8}$	18	9
4	$10\frac{1}{4}$	15	$7\frac{3}{4}$	5	$2\frac{1}{4}$	16	$8\frac{1}{4}$	5	$6\frac{1}{4}$	17	$8\frac{7}{8}$	5	$10\frac{1}{4}$	18	$9\frac{3}{8}$
4	$10\frac{3}{8}$	15	$8\frac{1}{8}$	5	$2\frac{3}{8}$	16	$8\frac{5}{8}$	5	$6\frac{3}{8}$	17	$9\frac{1}{4}$	5	$10\frac{3}{8}$	18	$9\frac{3}{4}$
4	$10\frac{1}{2}$	15	$8\frac{1}{2}$	5	$2\frac{1}{2}$	16	9	5	$6\frac{1}{2}$	17	$9\frac{5}{8}$	5	$10\frac{1}{2}$	18	$10\frac{1}{8}$
4	$10\frac{5}{8}$	15	$8\frac{7}{8}$	5	$2\frac{5}{8}$	16	$9\frac{3}{8}$	5	$6\frac{5}{8}$	17	10	5	$10\frac{5}{8}$	18	$10\frac{1}{2}$
4	$10\frac{3}{4}$	15	$9\frac{1}{4}$	5	$2\frac{3}{4}$	16	$9\frac{7}{8}$	5	$6\frac{3}{4}$	17	$10\frac{3}{8}$	5	$10\frac{3}{4}$	18	11
4	$10\frac{7}{8}$	15	$9\frac{5}{8}$	5	$2\frac{7}{8}$	16	$10\frac{1}{4}$	5	$6\frac{7}{8}$	17	$10\frac{3}{4}$	5	$10\frac{7}{8}$	18	$11\frac{3}{8}$
4	11	15	10	5	3	16	$10\frac{5}{8}$	5	7	17	$11\frac{1}{8}$	5	11	18	$11\frac{3}{4}$
4	$11\frac{1}{8}$	15	$10\frac{3}{8}$	5	$3\frac{1}{8}$	16	11	5	$7\frac{1}{8}$	17	$11\frac{1}{2}$	5	$11\frac{1}{8}$	19	$0\frac{1}{8}$
4	$11\frac{1}{4}$	15	$10\frac{7}{8}$	5	$3\frac{1}{4}$	16	$11\frac{3}{8}$	5	$7\frac{1}{4}$	18	0	5	$11\frac{1}{4}$	19	$0\frac{1}{4}$
4	$11\frac{3}{8}$	15	$11\frac{1}{4}$	5	$3\frac{3}{8}$	16	$11\frac{3}{4}$	5	$7\frac{3}{8}$	18	$0\frac{3}{8}$	5	$11\frac{3}{8}$	19	$0\frac{7}{8}$
4	$11\frac{1}{2}$	15	$11\frac{5}{8}$	5	$3\frac{1}{2}$	17	$0\frac{1}{8}$	5	$7\frac{1}{2}$	18	$0\frac{3}{4}$	5	$11\frac{1}{2}$	19	$1\frac{3}{8}$
4	$11\frac{5}{8}$	16	0	5	$3\frac{5}{8}$	17	$0\frac{5}{8}$	5	$7\frac{5}{8}$	18	$1\frac{1}{8}$	5	$11\frac{5}{8}$	19	$1\frac{3}{4}$
4	$11\frac{3}{4}$	16	$0\frac{3}{8}$	5	$3\frac{3}{4}$	17	1	5	$7\frac{3}{4}$	18	$1\frac{1}{2}$	5	$11\frac{3}{4}$	19	$2\frac{1}{8}$
4	$11\frac{7}{8}$	16	$0\frac{3}{4}$	5	$3\frac{7}{8}$	17	$1\frac{3}{8}$	5	$7\frac{7}{8}$	18	$1\frac{7}{8}$	5	$11\frac{7}{8}$	19	$2\frac{1}{2}$
5	0	16	$1\frac{1}{8}$	5	4	17	$1\frac{3}{4}$	5	8	18	$2\frac{3}{8}$	6	0	19	$2\frac{7}{8}$
5	$0\frac{1}{8}$	16	$1\frac{1}{8}$	5	$4\frac{1}{8}$	17	$2\frac{1}{8}$	5	$8\frac{1}{8}$	18	$2\frac{3}{4}$	6	$0\frac{1}{8}$	19	$3\frac{1}{4}$
5	$0\frac{1}{4}$	16	2	5	$4\frac{1}{4}$	17	$2\frac{1}{2}$	5	$8\frac{1}{4}$	18	$3\frac{1}{8}$	6	$0\frac{1}{4}$	19	$3\frac{5}{8}$
5	$0\frac{3}{8}$	16	$2\frac{3}{8}$	5	$4\frac{3}{8}$	17	$2\frac{7}{8}$	5	$8\frac{3}{8}$	18	$3\frac{1}{2}$	6	$0\frac{3}{8}$	19	4
5	$0\frac{1}{2}$	16	$2\frac{3}{4}$	5	$4\frac{1}{2}$	17	$3\frac{3}{8}$	5	$8\frac{1}{2}$	18	$3\frac{7}{8}$	6	$0\frac{1}{2}$	19	$4\frac{1}{8}$
5	$0\frac{5}{8}$	16	$3\frac{1}{8}$	5	$4\frac{5}{8}$	17	$3\frac{3}{4}$	5	$8\frac{5}{8}$	18	$4\frac{1}{4}$	6	$0\frac{5}{8}$	19	$4\frac{7}{8}$
5	$0\frac{3}{4}$	16	$3\frac{1}{2}$	5	$4\frac{3}{4}$	17	$4\frac{1}{8}$	5	$8\frac{3}{4}$	18	$4\frac{5}{8}$	6	$0\frac{3}{4}$	19	$5\frac{1}{4}$
5	$0\frac{7}{8}$	16	$3\frac{7}{8}$	5	$4\frac{7}{8}$	17	$4\frac{1}{2}$	5	$8\frac{7}{8}$	18	5	6	$0\frac{7}{8}$	19	$5\frac{5}{8}$

'or ANGLE IRON measuring ¼ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
6	1	19	6	6	5	20	6⅝	6	9	21	7⅛	7	1	22	7¾
6	1⅛	19	6⅜	6	5⅛	20	7	6	9⅛	21	7⅜	7	1⅛	22	8⅛
6	1¼	19	6⅞	6	5¼	20	7⅜	6	9¼	21	8	7	1¼	22	8½
6	1⅜	19	7¼	6	5⅜	20	7¾	6	9⅜	21	8⅜	7	1⅜	22	8⅞
6	1½	19	7⅝	6	5½	20	8⅛	6	9½	21	8¾	7	1½	22	9¼
6	1⅝	19	8	6	5⅝	20	8½	6	9⅝	21	9⅛	7	1⅝	22	9¾
6	1¾	19	8⅜	6	5¾	20	9	6	9¾	21	9½	7	1¾	22	10⅛
6	1⅞	19	8¾	6	5⅞	20	9⅜	6	9⅞	21	9⅞	7	1⅞	22	10½
6	2	19	9⅛	6	6	20	9¾	6	10	21	10⅜	7	2	22	10⅞
6	2⅛	19	9⅝	6	6⅛	20	10⅛	6	10⅛	21	10¾	7	2⅛	22	11¼
6	2¼	19	10	6	6¼	20	10½	6	10¼	21	11⅛	7	2¼	22	11⅝
6	2⅜	19	10⅜	6	6⅜	20	10⅞	6	10⅜	21	11½	7	2⅜	23	0
6	2½	19	10¾	6	6½	20	11⅜	6	10½	21	11⅞	7	2½	23	0½
6	2⅝	19	11⅛	6	6⅝	20	11¾	6	10⅝	22	0¼	7	2⅝	23	0⅞
6	2¾	19	11½	6	6¾	21	0⅛	6	10¾	22	0⅝	7	2¾	23	1¼
6	2⅞	19	11⅞	6	6⅞	21	0½	6	10⅞	22	1	7	2⅞	23	1⅝
6	3	20	0⅜	6	7	21	0⅞	6	11	22	1½	7	3	23	2
6	3⅛	20	0¾	6	7⅛	21	1¼	6	11⅛	22	1⅞	7	3⅛	23	2⅜
6	3¼	20	1⅛	6	7¼	21	1⅝	6	11¼	22	2¼	7	3¼	23	2¾
6	3⅜	20	1½	6	7⅜	21	2	6	11⅜	22	2⅝	7	3⅜	23	3¼
6	3½	20	1⅞	6	7½	21	2½	6	11½	22	3	7	3½	23	3⅝
6	3⅝	20	2¼	6	7⅝	21	2⅞	6	11⅝	22	3⅜	7	3⅝	23	4
6	3¾	20	2⅝	6	7¾	21	3¼	6	11¾	22	3⅞	7	3¾	23	4⅜
6	3⅞	20	3	6	7⅞	21	3⅝	6	11⅞	22	4¼	7	3⅞	23	4¾
6	4	20	3½	6	8	21	4	7	0	22	4⅝	7	4	23	5⅛
6	4⅛	20	3⅞	6	8⅛	21	4⅜	7	0⅛	22	5	7	4⅛	23	5½
6	4¼	20	4¼	6	8¼	21	4¾	7	0¼	22	5⅜	7	4¼	23	6
6	4⅜	20	4⅝	6	8⅜	21	5⅛	7	0⅜	22	5¾	7	4⅜	23	6⅜
6	4½	20	5	6	8½	21	5½	7	0½	22	6⅛	7	4½	23	6¾
6	4⅝	20	5⅜	6	8⅝	21	6	7	0⅝	22	6½	7	4⅝	23	7⅛
6	4¾	20	5⅞	6	8¾	21	6⅜	7	0¾	22	7	7	4¾	23	7½
6	4⅞	20	6¼	6	8⅞	21	6¾	7	0⅞	22	7⅜	7	4⅞	23	7⅞

For ANGLE IRON measuring $\frac{3}{4}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
7	5	23	$8\frac{1}{4}$	7	9	24	$8\frac{7}{8}$	8	1	25	$9\frac{1}{2}$	8	5	26	10
7	$5\frac{1}{8}$	23	$8\frac{3}{4}$	7	$9\frac{1}{8}$	24	$9\frac{1}{4}$	8	$1\frac{1}{8}$	25	$9\frac{7}{8}$	8	$5\frac{1}{8}$	26	$10\frac{3}{8}$
7	$5\frac{1}{4}$	23	$9\frac{1}{8}$	7	$9\frac{1}{4}$	24	$9\frac{5}{8}$	8	$1\frac{1}{4}$	25	$10\frac{1}{4}$	8	$5\frac{1}{4}$	26	$10\frac{3}{4}$
7	$5\frac{3}{8}$	23	$9\frac{1}{2}$	7	$9\frac{3}{8}$	24	10	8	$1\frac{3}{8}$	25	$10\frac{5}{8}$	8	$5\frac{3}{8}$	26	$11\frac{1}{8}$
7	$5\frac{1}{2}$	23	$9\frac{7}{8}$	7	$9\frac{1}{2}$	24	$10\frac{1}{2}$	8	$1\frac{1}{2}$	25	11	8	$5\frac{1}{2}$	26	$11\frac{1}{2}$
7	$5\frac{5}{8}$	23	$10\frac{1}{4}$	7	$9\frac{5}{8}$	24	$10\frac{7}{8}$	8	$1\frac{5}{8}$	25	$11\frac{3}{8}$	8	$5\frac{5}{8}$	27	0
7	$5\frac{3}{4}$	23	$10\frac{5}{8}$	7	$9\frac{3}{4}$	24	$11\frac{1}{4}$	8	$1\frac{3}{4}$	25	$11\frac{3}{4}$	8	$5\frac{3}{4}$	27	$0\frac{3}{8}$
7	$5\frac{7}{8}$	23	11	7	$9\frac{5}{8}$	24	$11\frac{5}{8}$	8	$1\frac{7}{8}$	26	$0\frac{1}{8}$	8	$5\frac{7}{8}$	27	$0\frac{3}{4}$
7	6	23	$11\frac{1}{2}$	7	10	25	0	8	2	26	$0\frac{5}{8}$	8	6	27	$1\frac{1}{8}$
7	$6\frac{1}{8}$	23	$11\frac{7}{8}$	7	$10\frac{1}{8}$	25	$0\frac{3}{8}$	8	$2\frac{1}{8}$	26	1	8	$6\frac{1}{8}$	27	$1\frac{1}{2}$
7	$6\frac{1}{4}$	24	$0\frac{1}{4}$	7	$10\frac{1}{4}$	25	$0\frac{3}{4}$	8	$2\frac{1}{4}$	26	$1\frac{3}{8}$	8	$6\frac{1}{4}$	27	$1\frac{7}{8}$
7	$6\frac{3}{8}$	24	$0\frac{5}{8}$	7	$10\frac{3}{8}$	25	$1\frac{1}{4}$	8	$2\frac{3}{8}$	26	$1\frac{3}{4}$	8	$6\frac{3}{8}$	27	$2\frac{3}{8}$
7	$6\frac{1}{2}$	24	1	7	$10\frac{1}{2}$	25	$1\frac{5}{8}$	8	$2\frac{1}{2}$	26	$2\frac{1}{8}$	8	$6\frac{1}{2}$	27	$2\frac{3}{4}$
7	$6\frac{5}{8}$	24	$1\frac{3}{8}$	7	$10\frac{5}{8}$	25	2	8	$2\frac{5}{8}$	26	$2\frac{1}{2}$	8	$6\frac{5}{8}$	27	$3\frac{1}{8}$
7	$6\frac{3}{4}$	24	$1\frac{3}{4}$	7	$10\frac{3}{4}$	25	$2\frac{3}{8}$	8	$2\frac{3}{4}$	26	$2\frac{7}{8}$	8	$6\frac{3}{4}$	27	$3\frac{1}{2}$
7	$6\frac{7}{8}$	24	$2\frac{1}{4}$	7	$10\frac{7}{8}$	25	$2\frac{3}{4}$	8	$2\frac{7}{8}$	26	$3\frac{3}{8}$	8	$6\frac{7}{8}$	27	$3\frac{7}{8}$
7	7	24	$2\frac{5}{8}$	7	11	25	$3\frac{1}{8}$	8	3	26	$3\frac{3}{4}$	8	7	27	$4\frac{1}{4}$
7	$7\frac{1}{8}$	24	3	7	$11\frac{1}{8}$	25	$3\frac{1}{2}$	8	$3\frac{1}{8}$	26	$4\frac{1}{8}$	8	$7\frac{1}{8}$	27	$4\frac{5}{8}$
7	$7\frac{1}{4}$	24	$3\frac{3}{8}$	7	$11\frac{1}{4}$	25	$3\frac{7}{8}$	8	$3\frac{1}{4}$	26	$4\frac{1}{2}$	8	$7\frac{1}{4}$	27	5
7	$7\frac{3}{8}$	24	$3\frac{3}{4}$	7	$11\frac{3}{8}$	25	$4\frac{3}{8}$	8	$3\frac{3}{8}$	26	$4\frac{7}{8}$	8	$7\frac{3}{8}$	27	$5\frac{1}{8}$
7	$7\frac{1}{2}$	24	$4\frac{1}{8}$	7	$11\frac{1}{2}$	25	$4\frac{3}{4}$	8	$3\frac{1}{2}$	26	$5\frac{1}{4}$	8	$7\frac{1}{2}$	27	$5\frac{5}{8}$
7	$7\frac{5}{8}$	24	$4\frac{1}{2}$	7	$11\frac{5}{8}$	25	$5\frac{1}{8}$	8	$3\frac{5}{8}$	26	$5\frac{5}{8}$	8	$7\frac{5}{8}$	27	$6\frac{1}{4}$
7	$7\frac{3}{4}$	24	$4\frac{7}{8}$	7	$11\frac{3}{4}$	25	$5\frac{1}{2}$	8	$3\frac{3}{4}$	26	6	8	$7\frac{3}{4}$	27	$6\frac{5}{8}$
7	$7\frac{7}{8}$	24	$5\frac{3}{8}$	7	$11\frac{7}{8}$	25	$5\frac{7}{8}$	8	$3\frac{7}{8}$	26	$6\frac{1}{2}$	8	$7\frac{7}{8}$	27	7
7	8	24	$5\frac{3}{4}$	8	0	25	$6\frac{1}{4}$	8	4	26	$6\frac{7}{8}$	8	8	27	$7\frac{3}{8}$
7	$8\frac{1}{8}$	24	$6\frac{1}{8}$	8	$0\frac{1}{8}$	25	$6\frac{5}{8}$	8	$4\frac{1}{8}$	26	$7\frac{1}{4}$	8	$8\frac{1}{8}$	27	$7\frac{7}{8}$
7	$8\frac{1}{4}$	24	$6\frac{1}{2}$	8	$0\frac{1}{4}$	25	7	8	$4\frac{1}{4}$	26	$7\frac{5}{8}$	8	$8\frac{1}{4}$	27	$8\frac{1}{4}$
7	$8\frac{3}{8}$	24	$6\frac{7}{8}$	8	$0\frac{3}{8}$	25	$7\frac{1}{2}$	8	$4\frac{3}{8}$	26	8	8	$8\frac{3}{8}$	27	$8\frac{5}{8}$
7	$8\frac{1}{2}$	24	$7\frac{1}{4}$	8	$0\frac{1}{2}$	25	$7\frac{7}{8}$	8	$4\frac{1}{2}$	26	$8\frac{3}{8}$	8	$8\frac{1}{2}$	27	9
7	$8\frac{5}{8}$	24	$7\frac{5}{8}$	8	$0\frac{5}{8}$	25	$8\frac{1}{4}$	8	$4\frac{5}{8}$	26	$8\frac{7}{8}$	8	$8\frac{5}{8}$	27	$9\frac{3}{8}$
7	$8\frac{3}{4}$	24	8	8	$0\frac{3}{4}$	25	$8\frac{5}{8}$	8	$4\frac{3}{4}$	26	$9\frac{1}{4}$	8	$8\frac{3}{4}$	27	$9\frac{3}{4}$
7	$8\frac{7}{8}$	24	$8\frac{1}{2}$	8	$0\frac{7}{8}$	25	9	8	$4\frac{7}{8}$	26	$9\frac{5}{8}$	8	$8\frac{7}{8}$	27	$10\frac{1}{8}$

For ANGLE IRON measuring $\frac{3}{4}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.
3	5	11	$1\frac{1}{2}$	3	9	12	2	4	1	13	$2\frac{5}{8}$	4	5	14	$3\frac{1}{8}$
3	$5\frac{1}{8}$	11	$1\frac{7}{8}$	3	$9\frac{1}{8}$	12	$2\frac{3}{8}$	4	$1\frac{1}{8}$	13	3	4	$5\frac{1}{8}$	14	$3\frac{1}{2}$
3	$5\frac{1}{4}$	11	$2\frac{1}{4}$	3	$9\frac{1}{4}$	12	$2\frac{7}{8}$	4	$1\frac{1}{4}$	13	$3\frac{3}{8}$	4	$5\frac{1}{4}$	14	4
3	$5\frac{3}{8}$	11	$2\frac{5}{8}$	3	$9\frac{3}{8}$	12	$3\frac{1}{4}$	4	$1\frac{3}{8}$	13	$3\frac{3}{4}$	4	$5\frac{3}{8}$	14	$4\frac{3}{8}$
3	$5\frac{1}{2}$	11	3	3	$9\frac{1}{2}$	12	$3\frac{5}{8}$	4	$1\frac{1}{2}$	13	$4\frac{1}{4}$	4	$5\frac{1}{2}$	14	$4\frac{3}{4}$
3	$5\frac{5}{8}$	11	$3\frac{1}{2}$	3	$9\frac{5}{8}$	12	4	4	$1\frac{5}{8}$	13	$4\frac{5}{8}$	4	$5\frac{5}{8}$	14	$5\frac{1}{8}$
3	$5\frac{3}{4}$	11	$3\frac{7}{8}$	3	$9\frac{3}{4}$	12	$4\frac{3}{8}$	4	$1\frac{3}{4}$	13	5	4	$5\frac{3}{4}$	14	$5\frac{1}{2}$
3	$5\frac{7}{8}$	11	$4\frac{1}{4}$	3	$9\frac{7}{8}$	12	$4\frac{3}{4}$	4	$1\frac{7}{8}$	13	$5\frac{3}{8}$	4	$5\frac{7}{8}$	14	$5\frac{7}{8}$
3	6	11	$4\frac{5}{8}$	3	10	12	$5\frac{1}{4}$	4	2	13	$5\frac{3}{4}$	4	6	14	$6\frac{3}{8}$
3	$6\frac{1}{8}$	11	5	3	$10\frac{1}{8}$	12	$5\frac{5}{8}$	4	$2\frac{1}{8}$	13	$6\frac{1}{8}$	4	$6\frac{1}{8}$	14	$6\frac{3}{4}$
3	$6\frac{1}{4}$	11	$5\frac{3}{8}$	3	$10\frac{1}{4}$	12	6	4	$2\frac{1}{4}$	13	$6\frac{1}{2}$	4	$6\frac{1}{4}$	14	$7\frac{1}{8}$
3	$6\frac{3}{8}$	11	$5\frac{3}{4}$	3	$10\frac{3}{8}$	12	$6\frac{3}{8}$	4	$2\frac{3}{8}$	13	7	4	$6\frac{3}{8}$	14	$7\frac{1}{2}$
3	$6\frac{1}{2}$	11	$6\frac{1}{4}$	3	$10\frac{1}{2}$	12	$6\frac{3}{4}$	4	$2\frac{1}{2}$	13	$7\frac{3}{8}$	4	$6\frac{1}{2}$	14	$7\frac{7}{8}$
3	$6\frac{5}{8}$	11	$6\frac{5}{8}$	3	$10\frac{5}{8}$	12	$7\frac{1}{8}$	4	$2\frac{5}{8}$	13	$7\frac{3}{4}$	4	$6\frac{5}{8}$	14	$8\frac{1}{4}$
3	$6\frac{3}{4}$	11	7	3	$10\frac{3}{4}$	12	$7\frac{1}{2}$	4	$2\frac{3}{4}$	13	$8\frac{1}{8}$	4	$6\frac{3}{4}$	14	$8\frac{3}{4}$
3	$6\frac{7}{8}$	11	$7\frac{3}{8}$	3	$10\frac{7}{8}$	12	$7\frac{7}{8}$	4	$2\frac{7}{8}$	13	$8\frac{1}{2}$	4	$6\frac{7}{8}$	14	$9\frac{1}{8}$
3	7	11	$7\frac{3}{4}$	3	11	12	$8\frac{3}{8}$	4	3	13	$8\frac{7}{8}$	4	7	14	$9\frac{1}{2}$
3	$7\frac{1}{8}$	11	$8\frac{1}{8}$	3	$11\frac{1}{8}$	12	$8\frac{3}{4}$	4	$3\frac{1}{8}$	13	$9\frac{1}{4}$	4	$7\frac{1}{8}$	14	$9\frac{7}{8}$
3	$7\frac{1}{4}$	11	$8\frac{1}{2}$	3	$11\frac{1}{4}$	12	$9\frac{1}{8}$	4	$3\frac{1}{4}$	13	$9\frac{5}{8}$	4	$7\frac{1}{4}$	14	$10\frac{1}{4}$
3	$7\frac{3}{8}$	11	$8\frac{7}{8}$	3	$11\frac{3}{8}$	12	$9\frac{1}{2}$	4	$3\frac{3}{8}$	13	$10\frac{1}{8}$	4	$7\frac{3}{8}$	14	$10\frac{5}{8}$
3	$7\frac{1}{2}$	11	$9\frac{3}{8}$	3	$11\frac{1}{2}$	12	$9\frac{7}{8}$	4	$3\frac{1}{2}$	13	$10\frac{1}{2}$	4	$7\frac{1}{2}$	14	11
3	$7\frac{5}{8}$	11	$9\frac{3}{4}$	3	$11\frac{5}{8}$	12	$10\frac{3}{8}$	4	$3\frac{5}{8}$	13	$10\frac{7}{8}$	4	$7\frac{5}{8}$	14	$11\frac{1}{2}$
3	$7\frac{3}{4}$	11	$10\frac{1}{8}$	3	$11\frac{3}{4}$	12	$10\frac{3}{4}$	4	$3\frac{3}{4}$	13	$11\frac{1}{4}$	4	$7\frac{3}{4}$	14	$11\frac{7}{8}$
3	$7\frac{7}{8}$	11	$10\frac{1}{2}$	3	$11\frac{7}{8}$	12	$11\frac{1}{8}$	4	$3\frac{7}{8}$	13	$11\frac{3}{8}$	4	$7\frac{7}{8}$	15	$0\frac{1}{4}$
3	8	11	$10\frac{7}{8}$	4	0	12	$11\frac{1}{2}$	4	4	14	0	4	8	15	$0\frac{5}{8}$
3	$8\frac{1}{8}$	11	$11\frac{1}{4}$	4	$0\frac{1}{8}$	12	$11\frac{7}{8}$	4	$4\frac{1}{8}$	14	$0\frac{3}{8}$	4	$8\frac{1}{8}$	15	1
3	$8\frac{1}{4}$	11	$11\frac{5}{8}$	4	$0\frac{1}{4}$	13	$0\frac{1}{4}$	4	$4\frac{1}{4}$	14	$0\frac{7}{8}$	4	$8\frac{1}{4}$	15	$1\frac{3}{8}$
3	$8\frac{3}{8}$	12	$0\frac{1}{8}$	4	$0\frac{3}{8}$	13	$0\frac{5}{8}$	4	$4\frac{3}{8}$	14	$1\frac{1}{4}$	4	$8\frac{3}{8}$	15	$1\frac{7}{8}$
3	$8\frac{1}{2}$	12	$0\frac{1}{2}$	4	$0\frac{1}{2}$	13	1	4	$4\frac{1}{2}$	14	$1\frac{5}{8}$	4	$8\frac{1}{2}$	15	$2\frac{1}{4}$
3	$8\frac{5}{8}$	12	$0\frac{7}{8}$	4	$0\frac{5}{8}$	13	$1\frac{1}{2}$	4	$4\frac{5}{8}$	14	2	4	$8\frac{5}{8}$	15	$2\frac{5}{8}$
3	$8\frac{3}{4}$	12	$1\frac{1}{4}$	4	$0\frac{3}{4}$	13	$1\frac{7}{8}$	4	$4\frac{3}{4}$	14	$2\frac{3}{8}$	4	$8\frac{3}{4}$	15	3
3	$8\frac{7}{8}$	12	$1\frac{5}{8}$	4	$0\frac{7}{8}$	13	$2\frac{1}{4}$	4	$4\frac{7}{8}$	14	$2\frac{3}{4}$	4	$8\frac{7}{8}$	15	$3\frac{3}{8}$

For ANGLE IRON measuring $\frac{3}{4}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
4	9	15	3¾	5	1	16	4⅜	5	5	17	4⅞	5	9	18	5½
4	9⅛	15	4⅛	5	1⅛	16	4¾	5	5⅛	17	5¼	5	9⅛	18	5⅞
4	9¼	15	4½	5	1¼	16	5⅛	5	5¼	17	5⅜	5	9¼	18	6¼
4	9⅜	15	4⅞	5	1⅜	16	5½	5	5⅜	17	6	5	9⅜	18	6⅝
4	9½	15	5⅜	5	1½	16	5⅞	5	5½	17	6½	5	9½	18	7
4	9⅝	15	5¾	5	1⅝	16	6¼	5	5⅝	17	6⅞	5	9⅝	18	7⅜
4	9¾	15	6⅛	5	1¾	16	6⅝	5	5¾	17	7¼	5	9¾	18	7⅞
4	9⅞	15	6½	5	1⅞	16	7	5	5⅞	17	7⅝	5	9⅞	18	8¼
4	10	15	6⅞	5	2	16	7½	5	6	17	8	5	10	18	8⅝
4	10⅛	15	7¼	5	2⅛	16	7⅞	5	6⅛	17	8⅜	5	10⅛	18	9
4	10¼	15	7¾	5	2¼	16	8¼	5	6¼	17	8⅞	5	10¼	18	9⅜
4	10⅜	15	8⅛	5	2⅜	16	8⅝	5	6⅜	17	9¼	5	10⅜	18	9¾
4	10½	15	8½	5	2½	16	9	5	6½	17	9⅝	5	10½	18	10⅛
4	10⅝	15	8⅞	5	2⅝	16	9⅜	5	6⅝	17	10	5	10⅝	18	10½
4	10¾	15	9¼	5	2¾	16	9⅞	5	6¾	17	10⅜	5	10¾	18	11
4	10⅞	15	9⅝	5	2⅞	16	10¼	5	6⅞	17	10¾	5	10⅞	18	11⅜
4	11	15	10	5	3	16	10⅝	5	7	17	11⅛	5	11	18	11¾
4	11⅛	15	10⅜	5	3⅛	16	11	5	7⅛	17	11½	5	11⅛	19	0⅛
4	11¼	15	10⅞	5	3¼	16	11⅜	5	7¼	18	0	5	11¼	19	0⅜
4	11⅜	15	11¼	5	3⅜	16	11¾	5	7⅜	18	0⅜	5	11⅜	19	0⅞
4	11½	15	11⅝	5	3½	17	0⅛	5	7½	18	0¾	5	11½	19	1⅜
4	11⅝	16	0	5	3⅝	17	0⅝	5	7⅝	18	1⅛	5	11⅝	19	1¾
4	11¾	16	0⅜	5	3¾	17	1	5	7¾	18	1½	5	11¾	19	2⅛
4	11⅞	16	0¾	5	3⅞	17	1⅜	5	7⅞	18	1⅞	5	11⅞	19	2½
5	0	16	1⅛	5	4	17	1¾	5	8	18	2⅜	6	0	19	2⅞
5	0⅛	16	1⅝	5	4⅛	17	2⅛	5	8⅛	18	2¾	6	0⅛	19	3¼
5	0¼	16	2	5	4¼	17	2½	5	8¼	18	3⅛	6	0¼	19	3⅝
5	0⅜	16	2⅜	5	4⅜	17	2⅞	5	8⅜	18	3½	6	0⅜	19	4
5	0½	16	2¾	5	4½	17	3⅜	5	8½	18	3⅞	6	0½	19	4⅜
5	0⅝	16	3⅛	5	4⅝	17	3¾	5	8⅝	18	4¼	6	0⅝	19	4⅞
5	0¾	16	3½	5	4¾	17	4⅛	5	8¾	18	4⅝	6	0¾	19	5¼
5	0⅞	16	3⅞	5	4⅞	17	4½	5	8⅞	18	5	6	0⅞	19	5⅝

For Angle Iron measuring $\frac{3}{4}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
6	1	19	6	6	5	20	$6\frac{5}{8}$	6	9	21	$7\frac{1}{8}$	7	1	22	$7\frac{3}{4}$
6	$1\frac{1}{8}$	19	$6\frac{3}{8}$	6	$5\frac{1}{8}$	20	7	6	$9\frac{1}{8}$	21	$7\frac{5}{8}$	7	$1\frac{1}{8}$	22	$8\frac{1}{8}$
6	$1\frac{1}{4}$	19	$6\frac{7}{8}$	6	$5\frac{1}{4}$	20	$7\frac{3}{8}$	6	$9\frac{1}{4}$	21	8	7	$1\frac{1}{4}$	22	$8\frac{1}{8}$
6	$1\frac{3}{8}$	19	$7\frac{1}{4}$	6	$5\frac{3}{8}$	20	$7\frac{3}{4}$	6	$9\frac{3}{8}$	21	$8\frac{3}{8}$	7	$1\frac{3}{8}$	22	$8\frac{7}{8}$
6	$1\frac{1}{2}$	19	$7\frac{5}{8}$	6	$5\frac{1}{2}$	20	$8\frac{1}{8}$	6	$9\frac{1}{2}$	21	$8\frac{3}{4}$	7	$1\frac{1}{2}$	22	$9\frac{1}{4}$
6	$1\frac{5}{8}$	19	8	6	$5\frac{5}{8}$	20	$8\frac{1}{2}$	6	$9\frac{5}{8}$	21	$9\frac{1}{8}$	7	$1\frac{5}{8}$	22	$9\frac{3}{4}$
6	$1\frac{3}{4}$	19	$8\frac{3}{8}$	6	$5\frac{3}{4}$	20	9	6	$9\frac{3}{4}$	21	$9\frac{1}{2}$	7	$1\frac{3}{4}$	22	$10\frac{1}{8}$
6	$1\frac{7}{8}$	19	$8\frac{3}{4}$	6	$5\frac{7}{8}$	20	$9\frac{3}{8}$	6	$9\frac{7}{8}$	21	$9\frac{7}{8}$	7	$1\frac{7}{8}$	22	$10\frac{1}{2}$
6	2	19	$9\frac{1}{8}$	6	6	20	$9\frac{3}{4}$	6	10	21	$10\frac{3}{8}$	7	2	22	$10\frac{7}{8}$
6	$2\frac{1}{8}$	19	$9\frac{5}{8}$	6	$6\frac{1}{8}$	20	$10\frac{1}{8}$	6	$10\frac{1}{8}$	21	$10\frac{3}{4}$	7	$2\frac{1}{8}$	22	$11\frac{1}{4}$
6	$2\frac{1}{4}$	19	10	6	$6\frac{1}{4}$	20	$10\frac{1}{2}$	6	$10\frac{1}{4}$	21	$11\frac{1}{8}$	7	$2\frac{1}{4}$	22	$11\frac{5}{8}$
6	$2\frac{3}{8}$	19	$10\frac{3}{8}$	6	$6\frac{3}{8}$	20	$10\frac{7}{8}$	6	$10\frac{3}{8}$	21	$11\frac{1}{2}$	7	$2\frac{3}{8}$	23	0
6	$2\frac{1}{2}$	19	$10\frac{3}{4}$	6	$6\frac{1}{2}$	20	$11\frac{3}{8}$	6	$10\frac{1}{2}$	21	$11\frac{7}{8}$	7	$2\frac{1}{2}$	23	$0\frac{1}{2}$
6	$2\frac{5}{8}$	19	$11\frac{1}{8}$	6	$6\frac{5}{8}$	20	$11\frac{3}{4}$	6	$10\frac{5}{8}$	22	$0\frac{1}{4}$	7	$2\frac{5}{8}$	23	$0\frac{7}{8}$
6	$2\frac{3}{4}$	19	$11\frac{1}{2}$	6	$6\frac{3}{4}$	21	$0\frac{1}{8}$	6	$10\frac{3}{4}$	22	$0\frac{5}{8}$	7	$2\frac{3}{4}$	23	$1\frac{1}{4}$
6	$2\frac{7}{8}$	19	$11\frac{7}{8}$	6	$6\frac{7}{8}$	21	$0\frac{1}{2}$	6	$10\frac{7}{8}$	22	1	7	$2\frac{7}{8}$	23	$1\frac{5}{8}$
6	3	20	$0\frac{3}{8}$	6	7	21	$0\frac{7}{8}$	6	11	22	$1\frac{1}{2}$	7	3	23	2
6	$3\frac{1}{8}$	20	$0\frac{3}{4}$	6	$7\frac{1}{8}$	21	$1\frac{1}{4}$	6	$11\frac{1}{8}$	22	$1\frac{7}{8}$	7	$3\frac{1}{8}$	23	$2\frac{3}{8}$
6	$3\frac{1}{4}$	20	$1\frac{1}{8}$	6	$7\frac{1}{4}$	21	$1\frac{5}{8}$	6	$11\frac{1}{4}$	22	$2\frac{1}{4}$	7	$3\frac{1}{4}$	23	$2\frac{3}{4}$
6	$3\frac{3}{8}$	20	$1\frac{1}{2}$	6	$7\frac{3}{8}$	21	2	6	$11\frac{3}{8}$	22	$2\frac{5}{8}$	7	$3\frac{3}{8}$	23	$3\frac{1}{4}$
6	$3\frac{1}{2}$	20	$1\frac{7}{8}$	6	$7\frac{1}{2}$	21	$2\frac{1}{8}$	6	$11\frac{1}{2}$	22	3	7	$3\frac{1}{2}$	23	$3\frac{5}{8}$
6	$3\frac{5}{8}$	20	$2\frac{1}{4}$	6	$7\frac{5}{8}$	21	$2\frac{7}{8}$	6	$11\frac{5}{8}$	22	$3\frac{3}{8}$	7	$3\frac{5}{8}$	23	4
6	$3\frac{3}{4}$	20	$2\frac{5}{8}$	6	$7\frac{3}{4}$	21	$3\frac{1}{4}$	6	$11\frac{3}{4}$	22	$3\frac{7}{8}$	7	$3\frac{3}{4}$	23	$4\frac{3}{8}$
6	$3\frac{7}{8}$	20	3	6	$7\frac{7}{8}$	21	$3\frac{5}{8}$	6	$11\frac{7}{8}$	22	$4\frac{1}{4}$	7	$3\frac{7}{8}$	23	$4\frac{3}{4}$
6	4	20	$3\frac{1}{2}$	6	8	21	4	7	0	22	$4\frac{5}{8}$	7	4	23	$5\frac{1}{8}$
6	$4\frac{1}{8}$	20	$3\frac{7}{8}$	6	$8\frac{1}{8}$	21	$4\frac{3}{8}$	7	$0\frac{1}{8}$	22	5	7	$4\frac{1}{8}$	23	$5\frac{1}{2}$
6	$4\frac{1}{4}$	20	$4\frac{1}{4}$	6	$8\frac{1}{4}$	21	$4\frac{3}{4}$	7	$0\frac{1}{4}$	22	$5\frac{3}{8}$	7	$4\frac{1}{4}$	23	6
6	$4\frac{3}{8}$	20	$4\frac{5}{8}$	6	$8\frac{3}{8}$	21	$5\frac{1}{8}$	7	$0\frac{3}{8}$	22	$5\frac{3}{4}$	7	$4\frac{3}{8}$	23	$6\frac{3}{8}$
6	$4\frac{1}{2}$	20	5	6	$8\frac{1}{2}$	21	$5\frac{1}{2}$	7	$0\frac{1}{2}$	22	$6\frac{1}{8}$	7	$4\frac{1}{2}$	23	$6\frac{3}{4}$
6	$4\frac{5}{8}$	20	$5\frac{3}{8}$	6	$8\frac{5}{8}$	21	6	7	$0\frac{5}{8}$	22	$6\frac{1}{2}$	7	$4\frac{5}{8}$	23	$7\frac{1}{8}$
6	$4\frac{3}{4}$	20	$5\frac{7}{8}$	6	$8\frac{3}{4}$	21	$6\frac{3}{8}$	7	$0\frac{3}{4}$	22	7	7	$4\frac{3}{4}$	23	$7\frac{1}{2}$
6	$4\frac{7}{8}$	20	$6\frac{1}{4}$	6	$8\frac{7}{8}$	21	$6\frac{3}{4}$	7	$0\frac{7}{8}$	22	$7\frac{3}{8}$	7	$4\frac{7}{8}$	23	$7\frac{7}{8}$

For ANGLE IRON measuring $\frac{1}{4}$ of an Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
7	5	23	8 1/4	7	9	24	8 7/8	8	1	25	9 1/2	8	5	26	10
7	5 1/8	23	8 3/4	7	9 1/8	24	9 1/4	8	1 1/8	25	9 7/8	8	5 1/8	26	10 3/8
7	5 1/4	23	9 1/8	7	9 1/4	24	9 5/8	8	1 1/4	25	10 1/4	8	5 1/4	26	10 3/4
7	5 3/8	23	9 1/2	7	9 3/8	24	10	8	1 3/8	25	10 5/8	8	5 3/8	26	11 1/8
7	5 1/2	23	9 7/8	7	9 1/2	24	10 1/2	8	1 1/2	25	11	8	5 1/2	26	11 1/2
7	5 5/8	23	10 1/4	7	9 5/8	24	10 7/8	8	1 5/8	25	11 3/8	8	5 5/8	27	0
7	5 3/4	23	10 5/8	7	9 3/4	24	11 1/4	8	1 3/4	25	11 3/4	8	5 3/4	27	0 3/8
7	5 7/8	23	11	7	9 7/8	24	11 5/8	8	1 7/8	26	0 1/8	8	5 7/8	27	0 3/4
7	6	23	11 1/2	7	10	25	0	8	2	26	0 5/8	8	6	27	1 1/8
7	6 1/8	23	11 7/8	7	10 1/8	25	0 3/8	8	2 1/8	26	1	8	6 1/8	27	1 1/8
7	6 1/4	24	0 1/4	7	10 1/4	25	0 3/4	8	2 1/4	26	1 3/8	8	6 1/4	27	1 7/8
7	6 3/8	24	0 5/8	7	10 3/8	25	1 1/4	8	2 3/8	26	1 3/4	8	6 3/8	27	2 3/8
7	6 1/2	24	1	7	10 1/2	25	1 5/8	8	2 1/2	26	2 1/8	8	6 1/2	27	2 3/4
7	6 5/8	24	1 3/8	7	10 5/8	25	2	8	2 5/8	26	2 1/2	8	6 5/8	27	3 1/8
7	6 3/4	24	1 3/4	7	10 3/4	25	2 3/8	8	2 3/4	26	2 7/8	8	6 3/4	27	3 1/2
7	6 7/8	24	2 1/4	7	10 7/8	25	2 3/4	8	2 7/8	26	3 3/8	8	6 7/8	27	3 7/8
7	7	24	2 5/8	7	11	25	3 1/8	8	3	26	3 3/4	8	7	27	4 1/4
7	7 1/8	24	3	7	11 1/8	25	3 1/2	8	3 1/8	26	4 1/8	8	7 1/8	27	4 5/8
7	7 1/4	24	3 3/8	7	11 1/4	25	3 7/8	8	3 1/4	26	4 1/2	8	7 1/4	27	5
7	7 3/8	24	3 3/4	7	11 3/8	25	4 3/8	8	3 3/8	26	4 7/8	8	7 3/8	27	5 1/2
7	7 1/2	24	4 1/8	7	11 1/2	25	4 3/4	8	3 1/2	26	5 1/4	8	7 1/2	27	5 7/8
7	7 5/8	24	4 1/2	7	11 5/8	25	5 1/8	8	3 5/8	26	5 5/8	8	7 5/8	27	6 1/4
7	7 3/4	24	4 7/8	7	11 3/4	25	5 1/2	8	3 3/4	26	6	8	7 3/4	27	6 5/8
7	7 7/8	24	5 3/8	7	11 7/8	25	5 7/8	8	3 7/8	26	6 1/2	8	7 7/8	27	7
7	8	24	5 3/4	8	0	25	6 1/4	8	4	26	6 7/8	8	8	27	7 3/8
7	8 1/8	24	6 1/8	8	0 1/8	25	6 5/8	8	4 1/8	26	7 1/4	8	8 1/8	27	7 7/8
7	8 1/4	24	6 1/2	8	0 1/4	25	7	8	4 1/4	26	7 5/8	8	8 1/4	27	8 1/4
7	8 3/8	24	6 7/8	8	0 3/8	25	7 1/2	8	4 3/8	26	8	8	8 3/8	27	8 5/8
7	8 1/2	24	7 1/4	8	0 1/2	25	7 7/8	8	4 1/2	26	8 3/8	8	8 1/2	27	9
7	8 5/8	24	7 5/8	8	0 5/8	25	8 1/4	8	4 5/8	26	8 7/8	8	8 5/8	27	9 3/8
7	8 3/4	24	8	8	0 3/4	25	8 5/8	8	4 3/4	26	9 1/4	8	8 3/4	27	9 3/4
7	8 7/8	24	8 1/8	8	0 7/8	25	9	8	4 7/8	26	9 5/8	8	8 7/8	27	10 1/8

For Angle Iron measuring 1 Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
3	5	11	3	3	9	12	3 5/8	4	1	13	4 1/4	4	5	14	4 3/4
3	5 1/8	11	3 1/2	3	9 1/8	12	4	4	1 1/8	13	4 5/8	4	5 1/8	14	5 1/8
3	5 1/4	11	3 7/8	3	9 1/4	12	4 3/8	4	1 1/4	13	5	4	5 1/4	14	5 1/2
3	5 3/8	11	4 1/4	3	9 3/8	12	4 3/4	4	1 3/8	13	5 3/8	4	5 3/8	14	5 7/8
3	5 1/2	11	4 5/8	3	9 1/2	12	5 1/4	4	1 1/2	13	5 3/4	4	5 1/2	14	6 3/8
3	5 5/8	11	5	3	9 5/8	12	5 5/8	4	1 5/8	13	6 1/8	4	5 5/8	14	6 3/4
3	5 3/4	11	5 3/8	3	9 3/4	12	6	4	1 3/4	13	6 1/2	4	5 3/4	14	7 1/8
3	5 7/8	11	5 3/4	3	9 7/8	12	6 3/8	4	1 7/8	13	7	4	5 7/8	14	7 1/2
3	6	11	6 1/4	3	10	12	6 3/4	4	2	13	7 3/8	4	6	14	7 7/8
3	6 1/8	11	6 5/8	3	10 1/8	12	7 1/8	4	2 1/8	13	7 3/4	4	6 1/8	14	8 1/4
3	6 1/4	11	7	3	10 1/4	12	7 1/2	4	2 1/4	13	8 1/8	4	6 1/4	14	8 3/4
3	6 3/8	11	7 3/8	3	10 3/8	12	7 7/8	4	2 3/8	13	8 1/2	4	6 3/8	14	9 1/8
3	6 1/2	11	7 3/4	3	10 1/2	12	8 3/8	4	2 1/2	13	8 7/8	4	6 1/2	14	9 1/2
3	6 5/8	11	8 1/8	3	10 5/8	12	8 3/4	4	2 5/8	13	9 1/4	4	6 5/8	14	9 7/8
3	6 3/4	11	8 1/2	3	10 3/4	12	9 1/8	4	2 3/4	13	9 5/8	4	6 3/4	14	10 1/4
3	6 7/8	11	8 7/8	3	10 7/8	12	9 1/2	4	2 7/8	13	10 1/8	4	6 7/8	14	10 5/8
3	7	11	9 3/8	3	11	12	9 7/8	4	3	13	10 1/2	4	7	14	11
3	7 1/8	11	9 3/4	3	11 1/8	12	10 3/8	4	3 1/8	13	10 7/8	4	7 1/8	14	11 1/2
3	7 1/4	11	10 1/8	3	11 1/4	12	10 3/4	4	3 1/4	13	11 1/4	4	7 1/4	14	11 7/8
3	7 3/8	11	10 1/2	3	11 3/8	12	11 1/8	4	3 3/8	13	11 5/8	4	7 3/8	15	0 1/4
3	7 1/2	11	10 7/8	3	11 1/2	12	11 1/2	4	3 1/2	14	0	4	7 1/2	15	0 5/8
3	7 5/8	11	11 1/4	3	11 5/8	12	11 7/8	4	3 5/8	14	0 3/8	4	7 5/8	15	1
3	7 3/4	11	11 5/8	3	11 3/4	13	0 1/4	4	3 3/4	14	0 7/8	4	7 3/4	15	1 3/8
3	7 7/8	12	0 1/8	3	11 7/8	13	0 5/8	4	3 7/8	14	1 1/4	4	7 7/8	15	1 7/8
3	8	12	0 1/2	4	0	13	1	4	4	14	1 5/8	4	8	15	2 1/4
3	8 1/8	12	0 7/8	4	0 1/8	13	1 1/2	4	4 1/8	14	2	4	8 1/8	15	2 5/8
3	8 1/4	12	1 1/4	4	0 1/4	13	1 7/8	4	4 1/4	14	2 3/8	4	8 1/4	15	3
3	8 3/8	12	1 5/8	4	0 3/8	13	2 1/4	4	4 3/8	14	2 3/4	4	8 3/8	15	3 3/8
3	8 1/2	12	2	4	0 1/2	13	2 5/8	4	4 1/2	14	3 1/8	4	8 1/2	15	3 3/4
3	8 5/8	12	2 3/8	4	0 5/8	13	3	4	4 5/8	14	3 1/2	4	8 5/8	15	4 1/8
3	8 3/4	12	2 7/8	4	0 3/4	13	3 3/8	4	4 3/4	14	4	4	8 3/4	15	4 1/2
3	8 7/8	12	3 1/4	4	0 7/8	13	3 3/4	4	4 7/8	14	4 3/8	4	8 7/8	15	4 7/8

For Angle Iron measuring 1 Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
4	9	15	5 3/8	5	1	16	5 7/8	5	5	17	6 1/2	5	9	18	7
4	9 1/8	15	5 3/4	5	1 1/8	16	6 1/4	5	5 1/8	17	6 7/8	5	9 1/8	18	7 3/8
4	9 1/4	15	6 1/8	5	1 1/4	16	6 3/8	5	5 1/4	17	7 1/4	5	9 1/4	18	7 7/8
4	9 3/8	15	6 1/2	5	1 3/8	16	7	5	5 3/8	17	7 3/8	5	9 3/8	18	8 1/4
4	9 1/2	15	6 7/8	5	1 1/2	16	7 1/2	5	5 1/2	17	8	5	9 1/2	18	8 3/8
4	9 5/8	15	7 1/4	5	1 5/8	16	7 7/8	5	5 5/8	17	8 3/8	5	9 5/8	18	9
4	9 3/4	15	7 3/4	5	1 3/4	16	8 1/4	5	5 3/4	17	8 7/8	5	9 3/4	18	9 3/8
4	9 7/8	15	8 1/8	5	1 7/8	16	8 3/8	5	5 7/8	17	9 1/4	5	9 7/8	18	9 3/4
4	10	15	8 1/2	5	2	16	9	5	6	17	9 3/8	5	10	18	10 1/8
4	10 1/8	15	8 7/8	5	2 1/8	16	9 3/8	5	6 1/8	17	10	5	10 1/8	18	10 1/2
4	10 1/4	15	9 1/4	5	2 1/4	16	9 7/8	5	6 1/4	17	10 3/8	5	10 1/4	18	11
4	10 3/8	15	9 5/8	5	2 3/8	16	10 1/4	5	6 3/8	17	10 3/4	5	10 3/8	18	11 3/8
4	10 1/2	15	10	5	2 1/2	16	10 5/8	5	6 1/2	17	11 1/8	5	10 1/2	18	11 3/4
4	10 5/8	15	10 3/8	5	2 5/8	16	11	5	6 5/8	17	11 1/2	5	10 5/8	19	0 1/8
4	10 3/4	15	10 7/8	5	2 3/4	16	11 3/8	5	6 3/4	18	0	5	10 3/4	19	0 1/2
4	10 7/8	15	11 1/4	5	2 7/8	16	11 3/4	5	6 7/8	18	0 3/8	5	10 7/8	19	0 7/8
4	11	15	11 5/8	5	3	17	0 1/8	5	7	18	0 3/4	5	11	19	1 3/8
4	11 1/8	16	0	5	3 1/8	17	0 5/8	5	7 1/8	18	1 1/8	5	11 1/8	19	1 3/4
4	11 1/4	16	0 3/8	5	3 1/4	17	1	5	7 1/4	18	1 1/2	5	11 1/4	19	2 1/8
4	1 3/8	16	0 3/4	5	3 3/8	17	1 3/8	5	7 3/8	18	1 7/8	5	11 3/8	19	2 1/2
4	1 1/2	16	1 1/8	5	3 1/2	17	1 3/4	5	7 1/2	18	2 3/8	5	11 1/2	19	2 7/8
4	11 5/8	16	1 5/8	5	3 5/8	17	2 1/8	5	7 5/8	18	2 3/4	5	11 5/8	19	3 1/4
4	11 3/4	16	2	5	3 3/4	17	2 1/2	5	7 3/4	18	3 1/8	5	11 3/4	19	3 5/8
4	11 7/8	16	2 3/8	5	3 7/8	17	2 7/8	5	7 7/8	18	3 1/2	5	11 7/8	19	4
5	0	16	2 3/4	5	4	17	3 3/8	5	8	18	3 7/8	6	0	19	4 1/8
5	0 1/8	16	3 1/8	5	4 1/8	17	3 3/4	5	8 1/8	18	4 1/4	6	0 1/8	19	4 7/8
5	0 1/4	16	3 1/2	5	4 1/4	17	4 1/8	5	8 1/4	18	4 5/8	6	0 1/4	19	5 1/4
5	0 3/8	16	3 7/8	5	4 3/8	17	4 1/2	5	8 3/8	18	5	6	0 3/8	19	5 5/8
5	0 1/2	16	4 3/8	5	4 1/2	17	4 7/8	5	8 1/2	18	5 1/2	6	0 1/2	19	6
5	0 5/8	16	4 3/4	5	4 5/8	17	5 1/4	5	8 5/8	18	5 7/8	6	0 5/8	19	6 3/8
5	0 3/4	16	5 1/8	5	4 3/4	17	5 5/8	5	8 3/4	18	6 1/4	6	0 3/4	19	6 7/8
5	0 7/8	16	5 1/2	5	4 7/8	17	6	5	8 7/8	18	6 5/8	6	0 7/8	19	7 1/4

For ANGLE IRON measuring 1 Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
6	1	19	7 7/8	6	5	20	8 1/8	6	9	21	8 3/4	7	1	22	9 1/4
6	1 1/8	19	8	6	5 1/8	20	8 1/2	6	9 1/8	21	9 1/8	7	1 1/8	22	9 3/4
6	1 1/4	19	8 3/8	6	5 1/4	20	9	6	9 1/4	21	9 1/2	7	1 1/4	22	10 1/8
6	1 3/8	19	8 3/4	6	5 3/8	20	9 3/8	6	9 3/8	21	9 7/8	7	1 3/8	22	10 1/2
6	1 1/2	19	9 1/8	6	5 1/2	20	9 3/4	6	9 1/2	21	10 3/8	7	1 1/2	22	10 7/8
6	1 5/8	19	9 5/8	6	5 5/8	20	10 1/8	6	9 5/8	21	10 3/4	7	1 5/8	22	11 1/4
6	1 3/4	19	10	6	5 3/4	20	10 1/2	6	9 3/4	21	11 1/8	7	1 3/4	22	11 5/8
6	1 7/8	19	10 3/8	6	5 7/8	20	10 7/8	6	9 7/8	21	11 1/2	7	1 7/8	23	0
6	2	19	10 3/4	6	6	20	11 3/8	6	10	21	11 7/8	7	2	23	0 1/2
6	2 1/8	19	11 1/8	6	6 1/8	20	11 3/4	6	10 1/8	22	0 1/4	7	2 1/8	23	0 7/8
6	2 1/4	19	11 1/2	6	6 1/4	21	0 1/8	6	10 1/4	22	0 5/8	7	2 1/4	23	1 1/4
6	2 3/8	19	11 7/8	6	6 3/8	21	0 1/2	6	10 3/8	22	1	7	2 3/8	23	1 5/8
6	2 1/2	20	0 3/8	6	6 1/2	21	0 7/8	6	10 1/2	22	1 1/2	7	2 1/2	23	2
6	2 5/8	20	0 3/4	6	6 5/8	21	1 1/4	6	10 5/8	22	1 7/8	7	2 5/8	23	2 3/8
6	2 3/4	20	1 1/8	6	6 3/4	21	1 5/8	6	10 3/4	22	2 1/4	7	2 3/4	23	2 3/4
6	2 7/8	20	1 1/2	6	6 7/8	21	2	6	10 7/8	22	2 5/8	7	2 7/8	23	3 1/4
6	3	20	1 7/8	6	7	21	2 1/2	6	11	22	3	7	3	23	3 5/8
6	3 1/8	20	2 1/4	6	7 1/8	21	2 7/8	6	11 1/8	22	3 3/8	7	3 1/8	23	4
6	3 1/4	20	2 5/8	6	7 1/4	21	3 1/4	6	11 1/4	22	3 7/8	7	3 1/4	23	4 3/8
6	3 3/8	20	3	6	7 3/8	21	3 5/8	6	11 3/8	22	4 1/4	7	3 3/8	23	4 3/4
6	3 1/2	20	3 1/2	6	7 1/2	21	4	6	11 1/2	22	4 5/8	7	3 1/2	23	5 1/8
6	3 5/8	20	3 7/8	6	7 5/8	21	4 3/8	6	11 5/8	22	5	7	3 5/8	23	5 1/2
6	3 3/4	20	4 1/4	6	7 3/4	21	4 3/4	6	11 3/4	22	5 3/8	7	3 3/4	23	6
6	3 7/8	20	4 5/8	6	7 7/8	21	5 1/8	6	11 7/8	22	5 3/4	7	3 7/8	23	6 3/8
6	4	20	5	6	8	21	5 1/2	7	0	22	6 1/8	7	4	23	6 3/4
6	4 1/8	20	5 3/8	6	8 1/8	21	6	7	0 1/8	22	6 1/2	7	4 1/8	23	7 1/8
6	4 1/4	20	5 7/8	6	8 1/4	21	6 3/8	7	0 1/4	22	7	7	4 1/4	23	7 1/2
6	4 3/8	20	6 1/4	6	8 3/8	21	6 3/4	7	0 3/8	22	7 3/8	7	4 3/8	23	7 7/8
6	4 1/2	20	6 5/8	6	8 1/2	21	7 1/8	7	0 1/2	22	7 3/4	7	4 1/2	23	8 1/4
6	4 5/8	20	7	6	8 5/8	21	7 5/8	7	0 5/8	22	8 1/8	7	4 5/8	23	8 3/4
6	4 3/4	20	7 3/8	6	8 3/4	21	8	7	0 3/4	22	8 1/2	7	4 3/4	23	9 1/8
6	4 7/8	20	7 3/4	6	8 7/8	21	8 3/8	7	0 7/8	22	8 7/8	7	4 7/8	23	9 1/2

For Angle Iron measuring 1 Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
7	5	23	9 7/8	7	9	24	10 1/2	8	1	25	11	8	5	26	11 1/2
7	5 1/8	23	10 1/4	7	9 1/8	24	10 7/8	8	1 1/8	25	11 3/8	8	5 1/8	27	0
7	5 1/4	23	10 5/8	7	9 1/4	24	11 1/4	8	1 1/4	25	11 3/4	8	5 1/4	27	0 3/8
7	5 3/8	23	11	7	9 3/8	24	11 5/8	8	1 3/8	26	0 1/8	8	5 3/8	27	0 3/4
7	5 1/2	23	11 1/3	7	9 1/2	25	0	8	1 1/2	26	0 5/8	8	5 1/2	27	1 1/8
7	5 5/8	23	11 7/8	7	9 5/8	25	0 3/8	8	1 5/8	26	1	8	5 5/8	27	1 1/2
7	5 3/4	24	0 1/4	7	9 3/4	25	0 3/4	8	1 3/4	26	1 3/8	8	5 3/4	27	1 7/8
7	5 7/8	24	0 5/8	7	9 7/8	25	1 1/4	8	1 7/8	26	1 3/4	8	5 7/8	27	2 3/8
7	6	24	1	7	10	25	1 5/8	8	2	26	2 1/8	8	6	27	2 3/4
7	6 1/8	24	1 3/8	7	10 1/8	25	2	8	2 1/8	26	2 1/2	8	6 1/8	27	3 1/8
7	6 1/4	24	1 3/4	7	10 1/4	25	2 3/8	8	2 1/4	26	2 7/8	8	6 1/4	27	3 1/4
7	6 3/8	24	2 1/4	7	10 3/8	25	2 3/4	8	2 3/8	26	3 3/8	8	6 3/8	27	3 7/8
7	6 1/2	24	2 5/8	7	10 1/2	25	3 1/8	8	2 1/2	26	3 3/4	8	6 1/2	27	4 1/4
7	6 5/8	24	3	7	10 5/8	25	3 1/2	8	2 5/8	26	4 1/8	8	6 5/8	27	4 5/8
7	6 3/4	24	3 3/8	7	10 3/4	25	3 7/8	8	2 3/4	26	4 1/2	8	6 3/4	27	5
7	6 7/8	24	3 3/4	7	10 7/8	25	4 3/8	8	2 7/8	26	4 7/8	8	6 7/8	27	5 1/3
7	7	24	4 1/8	7	11	25	4 3/4	8	3	26	5 1/4	8	7	27	5 7/8
7	7 1/8	24	4 1/2	7	11 1/8	25	5 1/8	8	3 1/8	26	5 5/8	8	7 1/8	27	6 1/4
7	7 1/4	24	4 7/8	7	11 1/4	25	5 1/2	8	3 1/4	26	6	8	7 1/4	27	6 5/8
7	7 3/8	24	5 3/8	7	11 3/8	25	5 7/8	8	3 3/8	26	6 1/2	8	7 3/8	27	7
7	7 1/2	24	5 3/4	7	11 1/2	25	6 1/4	8	3 1/2	26	6 7/8	8	7 1/2	27	7 3/8
7	7 5/8	24	6 1/8	7	11 5/8	25	6 5/8	8	3 5/8	26	7 1/4	8	7 5/8	27	7 7/8
7	7 3/4	24	6 1/2	7	11 3/4	25	7	8	3 3/4	26	7 5/8	8	7 3/4	27	8 1/4
7	7 7/8	24	6 7/8	7	11 7/8	25	7 1/2	8	3 7/8	26	8	8	7 7/8	27	8 5/8
7	8	24	7 1/4	8	0	25	7 7/8	8	4	26	8 3/8	8	8	27	9
7	8 1/8	24	7 5/8	8	0 1/8	25	8 1/4	8	4 1/8	26	8 7/8	8	8 1/8	27	9 3/8
7	8 1/4	24	8	8	0 1/4	25	8 5/8	8	4 1/4	26	9 1/4	8	8 1/4	27	9 3/4
7	8 3/8	24	8 1/2	8	0 3/8	25	9	8	4 3/8	26	9 5/8	8	8 3/8	27	10 1/8
7	8 1/2	24	8 7/8	8	0 1/2	25	9 1/2	8	4 1/2	26	10	8	8 1/2	27	10 5/8
7	8 5/8	24	9 1/4	8	0 5/8	25	9 7/8	8	4 5/8	26	10 3/8	8	8 5/8	27	11
7	8 3/4	24	9 5/8	8	0 3/4	25	10 1/4	8	4 3/4	26	10 3/4	8	8 3/4	27	11 3/8
7	8 7/8	24	10	8	0 7/8	25	10 5/8	8	4 7/8	26	11 1/8	8	8 7/8	27	11 3/4

For Angle Iron measuring 1 Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
3	5	11	3	3	9	12	3 5/8	4	1	13	4 1/4	4	5	14	4 3/4
3	5 1/8	11	3 1/2	3	9 1/8	12	4	4	1 1/8	13	4 5/8	4	5 1/8	14	5 1/8
3	5 1/4	11	3 7/8	3	9 1/4	12	4 3/8	4	1 1/4	13	5	4	5 1/4	14	5 1/2
3	5 3/8	11	4 1/4	3	9 3/8	12	4 3/4	4	1 3/8	13	5 3/8	4	5 3/8	14	5 7/8
3	5 1/2	11	4 5/8	3	9 1/2	12	5 1/4	4	1 1/2	13	5 3/4	4	5 1/2	14	6 3/8
3	5 5/8	11	5	3	9 5/8	12	5 5/8	4	1 5/8	13	6 1/8	4	5 5/8	14	6 3/4
3	5 3/4	11	5 3/8	3	9 3/4	12	6	4	1 3/4	13	6 1/2	4	5 3/4	14	7 1/8
3	5 7/8	11	5 3/4	3	9 7/8	12	6 3/8	4	1 7/8	13	7	4	5 7/8	14	7 1/2
3	6	11	6 1/4	3	10	12	6 3/4	4	2	13	7 3/8	4	6	14	7 7/8
3	6 1/8	11	6 5/8	3	10 1/8	12	7 1/8	4	2 1/8	13	7 3/4	4	6 1/8	14	8 1/4
3	6 1/4	11	7	3	10 1/4	12	7 1/2	4	2 1/4	13	8 1/8	4	6 1/4	14	8 3/4
3	6 3/8	11	7 3/8	3	10 3/8	12	7 5/8	4	2 3/8	13	8 1/2	4	6 3/8	14	9 1/8
3	6 1/2	11	7 3/4	3	10 1/2	12	8 3/8	4	2 1/2	13	8 7/8	4	6 1/2	14	9 1/2
3	6 5/8	11	8 1/8	3	10 5/8	12	8 3/4	4	2 5/8	13	9 1/4	4	6 5/8	14	9 7/8
3	6 3/4	11	8 1/2	3	10 3/4	12	9 1/8	4	2 3/4	13	9 5/8	4	6 3/4	14	10 1/4
3	6 7/8	11	8 7/8	3	10 7/8	12	9 1/2	4	2 7/8	13	10 1/8	4	6 7/8	14	10 5/8
3	7	11	9 3/8	3	11	12	9 7/8	4	3	13	10 1/2	4	7	14	11
3	7 1/8	11	9 3/4	3	11 1/8	12	10 3/8	4	3 1/8	13	10 7/8	4	7 1/8	14	11 1/2
3	7 1/4	11	10 1/8	3	11 1/4	12	10 3/4	4	3 1/4	13	11 1/4	4	7 1/4	14	11 7/8
3	7 3/8	11	10 1/2	3	11 3/8	12	11 1/8	4	3 3/8	13	11 5/8	4	7 3/8	15	0 1/4
3	7 1/2	11	10 7/8	3	11 1/2	12	11 1/2	4	3 1/2	14	0	4	7 1/2	15	0 5/8
3	7 5/8	11	11 1/4	3	11 5/8	12	11 7/8	4	3 5/8	14	0 3/8	4	7 5/8	15	1
3	7 3/4	11	11 5/8	3	11 3/4	13	0 1/4	4	3 3/4	14	0 7/8	4	7 3/4	15	1 3/8
3	7 7/8	12	0 1/8	3	11 7/8	13	0 5/8	4	3 7/8	14	1 1/4	4	7 7/8	15	1 7/8
3	8	12	0 1/2	4	0	13	1	4	4	14	1 5/8	4	8	15	2 1/4
3	8 1/8	12	0 7/8	4	0 1/8	13	1 1/2	4	4 1/8	14	2	4	8 1/8	15	2 5/8
3	8 1/4	12	1 1/4	4	0 1/4	13	1 7/8	4	4 1/4	14	2 3/8	4	8 1/4	15	3
3	8 3/8	12	1 5/8	4	0 3/8	13	2 1/4	4	4 3/8	14	2 3/4	4	8 3/8	15	3 3/8
3	8 1/2	12	2	4	0 1/2	13	2 5/8	4	4 1/2	14	3 1/8	4	8 1/2	15	3 3/4
3	8 5/8	12	2 3/8	4	0 5/8	13	3	4	4 5/8	14	3 1/2	4	8 5/8	15	4 1/8
3	8 3/4	12	2 7/8	4	0 3/4	13	3 3/8	4	4 3/4	14	4	4	8 3/4	15	4 1/2
3	8 7/8	12	3 1/4	4	0 7/8	13	3 3/4	4	4 7/8	14	4 3/8	4	8 7/8	15	4 7/8

For Angle Iron measuring 1 Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
4	9	15	5 3/8	5	1	16	5 7/8	5	5	17	6 1/2	5	9	18	7
4	9 1/8	15	5 3/4	5	1 1/8	16	6 1/4	5	5 1/8	17	6 7/8	5	9 1/8	18	7 3/8
4	9 1/4	15	6 1/8	5	1 1/4	16	6 5/8	5	5 1/4	17	7 1/4	5	9 1/4	18	7 7/8
4	9 3/8	15	6 1/2	5	1 3/8	16	7	5	5 3/8	17	7 5/8	5	9 3/8	18	8 1/4
4	9 1/2	15	6 7/8	5	1 1/2	16	7 1/2	5	5 1/2	17	8	5	9 1/2	18	8 5/8
4	9 5/8	15	7 1/4	5	1 5/8	16	7 7/8	5	5 5/8	17	8 3/8	5	9 5/8	18	9
4	9 3/4	15	7 3/4	5	1 3/4	16	8 1/4	5	5 3/4	17	8 7/8	5	9 3/4	18	9 3/8
4	9 7/8	15	8 1/8	5	1 7/8	16	8 5/8	5	5 7/8	17	9 1/4	5	9 7/8	18	9 3/4
4	10	15	8 1/2	5	2	16	9	5	6	17	9 5/8	5	10	18	10 1/8
4	10 1/8	15	8 7/8	5	2 1/8	16	9 3/8	5	6 1/8	17	10	5	10 1/8	18	10 1/2
4	10 1/4	15	9 1/4	5	2 1/4	16	9 7/8	5	6 1/4	17	10 3/8	5	10 1/4	18	11
4	10 3/8	15	9 5/8	5	2 3/8	16	10 1/4	5	6 3/8	17	10 3/4	5	10 3/8	18	11 3/8
4	10 1/2	15	10	5	2 1/2	16	10 5/8	5	6 1/2	17	11 1/8	5	10 1/2	18	11 3/4
4	10 5/8	15	10 3/8	5	2 5/8	16	11	5	6 5/8	17	11 1/2	5	10 5/8	19	0 1/8
4	10 3/4	15	10 7/8	5	2 3/4	16	11 3/8	5	6 3/4	18	0	5	10 3/4	19	0 1/2
4	10 7/8	15	11 1/4	5	2 7/8	16	11 3/4	5	6 7/8	18	0 3/8	5	10 7/8	19	0 7/8
4	11	15	11 5/8	5	3	17	0 1/8	5	7	18	0 3/4	5	11	19	1 3/8
4	11 1/8	16	0	5	3 1/8	17	0 5/8	5	7 1/8	18	1 1/8	5	11 1/8	19	1 3/4
4	11 1/4	16	0 3/8	5	3 1/4	17	1	5	7 1/4	18	1 1/2	5	11 1/4	19	2 1/8
4	1 3/8	16	0 3/4	5	3 3/8	17	1 3/8	5	7 3/8	18	1 7/8	5	11 3/8	19	2 1/2
4	1 1/2	16	1 1/8	5	3 1/2	17	1 3/4	5	7 1/2	18	2 3/8	5	11 1/2	19	2 7/8
4	11 5/8	16	1 5/8	5	3 5/8	17	2 1/8	5	7 5/8	18	2 3/4	5	11 5/8	19	3 1/4
4	11 3/4	16	2	5	3 3/4	17	2 1/2	5	7 3/4	18	3 1/8	5	11 3/4	19	3 5/8
4	11 7/8	16	2 3/8	5	3 7/8	17	2 7/8	5	7 7/8	18	3 1/2	5	11 7/8	19	4
5	0	16	2 3/4	5	4	17	3 3/8	5	8	18	3 7/8	6	0	19	4 1/2
5	0 1/8	16	3 1/8	5	4 1/8	17	3 3/4	5	8 1/8	18	4 1/4	6	0 1/8	19	4 7/8
5	0 1/4	16	3 1/2	5	4 1/4	17	4 1/8	5	8 1/4	18	4 5/8	6	0 1/4	19	5 1/4
5	0 3/8	16	3 7/8	5	4 3/8	17	4 1/2	5	8 3/8	18	5	6	0 3/8	19	5 5/8
5	0 1/2	16	4 3/8	5	4 1/2	17	4 7/8	5	8 1/2	18	5 1/2	6	0 1/2	19	6
5	0 5/8	16	4 3/4	5	4 5/8	17	5 1/4	5	8 5/8	18	5 7/8	6	0 5/8	19	6 3/8
5	0 3/4	16	5 1/8	5	4 3/4	17	5 5/8	5	8 3/4	18	6 1/4	6	0 3/4	19	6 7/8
5	0 7/8	16	5 1/2	5	4 7/8	17	6	5	8 7/8	18	6 5/8	6	0 7/8	19	7 1/4

For Angle Iron measuring 1 Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
6	1	19	7 5/8	6	5	20	8 1/8	6	9	21	8 3/4	7	1	22	9 1/4
6	1 1/8	19	8	6	5 1/8	20	8 1/2	6	9 1/8	21	9 3/8	7	1 1/8	22	9 3/4
6	1 1/4	19	8 3/8	6	5 1/4	20	9	6	9 1/4	21	9 1/2	7	1 1/4	22	10 1/8
6	1 3/8	19	8 3/4	6	5 3/8	20	9 3/8	6	9 3/8	21	9 7/8	7	1 3/8	22	10 1/2
6	1 1/2	19	9 1/8	6	5 1/2	20	9 3/4	6	9 1/2	21	10 3/8	7	1 1/2	22	10 7/8
6	1 5/8	19	9 5/8	6	5 5/8	20	10 1/8	6	9 5/8	21	10 3/4	7	1 5/8	22	11 1/4
6	1 3/4	19	10	6	5 3/4	20	10 1/2	6	9 3/4	21	11 1/8	7	1 3/4	22	11 5/8
6	1 7/8	19	10 3/8	6	5 7/8	20	10 7/8	6	9 7/8	21	11 1/2	7	1 7/8	23	0
6	2	19	10 3/4	6	6	20	11 3/8	6	10	21	11 7/8	7	2	23	0 1/2
6	2 1/8	19	11 1/8	6	6 1/8	20	11 3/4	6	10 1/8	22	0 1/4	7	2 1/8	23	0 7/8
6	2 1/4	19	11 1/2	6	6 1/4	21	0 1/8	6	10 1/4	22	0 5/8	7	2 1/4	23	1 1/4
6	2 3/8	19	11 7/8	6	6 3/8	21	0 1/2	6	10 3/8	22	1	7	2 3/8	23	1 5/8
6	2 1/2	20	0 3/8	6	6 1/2	21	0 7/8	6	10 1/2	22	1 1/2	7	2 1/2	23	2
6	2 5/8	20	0 3/4	6	6 5/8	21	1 1/4	6	10 5/8	22	1 7/8	7	2 5/8	23	2 3/8
6	2 3/4	20	1 1/8	6	6 3/4	21	1 5/8	6	10 3/4	22	2 1/4	7	2 3/4	23	2 3/4
6	2 7/8	20	1 1/2	6	6 7/8	21	2	6	10 7/8	22	2 5/8	7	2 7/8	23	3 1/4
6	3	20	1 7/8	6	7	21	2 1/2	6	11	22	3	7	3	23	3 5/8
6	3 1/8	20	2 1/4	6	7 1/8	21	2 7/8	6	11 1/8	22	3 3/8	7	3 1/8	23	4
6	3 1/4	20	2 5/8	6	7 1/4	21	3 1/4	6	11 1/4	22	3 7/8	7	3 1/4	23	4 3/8
6	3 3/8	20	3	6	7 3/8	21	3 5/8	6	11 3/8	22	4 1/4	7	3 3/8	23	4 3/4
6	3 1/2	20	3 1/2	6	7 1/2	21	4	6	11 1/2	22	4 5/8	7	3 1/2	23	5 1/8
6	3 5/8	20	3 7/8	6	7 5/8	21	4 3/8	6	11 5/8	22	5	7	3 5/8	23	5 1/2
6	3 3/4	20	4 1/4	6	7 3/4	21	4 3/4	6	11 3/4	22	5 3/8	7	3 3/4	23	6
6	3 7/8	20	4 5/8	6	7 7/8	21	5 1/8	6	11 7/8	22	5 3/4	7	3 7/8	23	6 3/8
6	4	20	5	6	8	21	5 1/2	7	0	22	6 1/8	7	4	23	6 3/4
6	4 1/8	20	5 3/8	6	8 1/8	21	6	7	0 1/8	22	6 1/2	7	4 1/8	23	7 1/8
6	4 1/4	20	5 7/8	6	8 1/4	21	6 3/8	7	0 1/4	22	7	7	4 1/4	23	7 1/2
6	4 3/8	20	6 1/4	6	8 3/8	21	6 3/4	7	0 3/8	22	7 3/8	7	4 3/8	23	7 7/8
6	4 1/2	20	6 5/8	6	8 1/2	21	7 1/8	7	0 1/2	22	7 3/4	7	4 1/2	23	8 1/4
6	4 5/8	20	7	6	8 5/8	21	7 5/8	7	0 5/8	22	8 1/8	7	4 5/8	23	8 3/4
6	4 3/4	20	7 3/8	6	8 3/4	21	8	7	0 3/4	22	8 1/2	7	4 3/4	23	9 1/8
6	4 7/8	20	7 3/4	6	8 7/8	21	8 3/8	7	0 7/8	22	8 7/8	7	4 7/8	23	9 1/2

For Angle Iron measuring 1 Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
7	5	23	9 7/8	7	9	24	10 1/2	8	1	25	11	8	5	26	11 1/2
7	5 1/8	23	10 1/4	7	9 1/8	24	10 7/8	8	1 1/8	25	11 3/8	8	5 1/8	27	0
7	5 1/4	23	10 3/8	7	9 1/4	24	11 1/4	8	1 1/4	25	11 3/4	8	5 1/4	27	0 3/8
7	5 3/8	23	11	7	9 3/8	24	11 5/8	8	1 3/8	26	0 1/8	8	5 3/8	27	0 3/4
7	5 1/2	23	11 1/8	7	9 1/2	25	0	8	1 1/2	26	0 3/8	8	5 1/2	27	1 1/8
7	5 3/8	23	11 7/8	7	9 3/8	25	0 3/8	8	1 3/8	26	1	8	5 3/8	27	1 1/2
7	5 3/4	24	0 1/4	7	9 3/4	25	0 3/4	8	1 3/4	26	1 3/8	8	5 3/4	27	1 7/8
7	5 7/8	24	0 3/8	7	9 7/8	25	1 1/4	8	1 7/8	26	1 3/4	8	5 7/8	27	2 3/8
7	6	24	1	7	10	25	1 1/8	8	2	26	2 1/8	8	6	27	2 3/4
7	6 1/8	24	1 3/8	7	10 1/8	25	2	8	2 1/8	26	2 1/2	8	6 1/8	27	3 1/8
7	6 1/4	24	1 3/4	7	10 1/4	25	2 3/8	8	2 1/4	26	2 7/8	8	6 1/4	27	3 1/2
7	6 3/8	24	2 1/4	7	10 3/8	25	2 3/4	8	2 3/8	26	3 3/8	8	6 3/8	27	3 7/8
7	6 1/2	24	2 3/8	7	10 1/2	25	3 1/8	8	2 1/2	26	3 3/4	8	6 1/2	27	4 1/4
7	6 5/8	24	3	7	10 5/8	25	3 1/2	8	2 5/8	26	4 1/8	8	6 5/8	27	4 5/8
7	6 3/4	24	3 3/8	7	10 3/4	25	3 7/8	8	2 3/4	26	4 1/2	8	6 3/4	27	5
7	6 7/8	24	3 3/4	7	10 7/8	25	4 3/8	8	2 7/8	26	4 7/8	8	6 7/8	27	5 1/2
7	7	24	4 1/8	7	11	25	4 3/4	8	3	26	5 1/4	8	7	27	5 7/8
7	7 1/8	24	4 1/2	7	11 1/8	25	5 1/8	8	3 1/8	26	5 5/8	8	7 1/8	27	6 1/4
7	7 1/4	24	4 7/8	7	11 1/4	25	5 1/2	8	3 1/4	26	6	8	7 1/4	27	6 5/8
7	7 3/8	24	5 3/8	7	11 3/8	25	5 7/8	8	3 3/8	26	6 1/2	8	7 3/8	27	7
7	7 1/2	24	5 3/4	7	11 1/2	25	6 1/4	8	3 1/2	26	6 7/8	8	7 1/2	27	7 3/8
7	7 5/8	24	6 1/8	7	11 5/8	25	6 5/8	8	3 5/8	26	7 1/4	8	7 5/8	27	7 7/8
7	7 3/4	24	6 1/2	7	11 3/4	25	7	8	3 3/4	26	7 5/8	8	7 3/4	27	8 1/4
7	7 7/8	24	6 7/8	7	11 7/8	25	7 1/2	8	3 7/8	26	8	8	7 7/8	27	8 5/8
7	8	24	7 1/4	8	0	25	7 7/8	8	4	26	8 3/8	8	8	27	9
7	8 1/8	24	7 5/8	8	0 1/8	25	8 1/4	8	4 1/8	26	8 7/8	8	8 1/8	27	9 3/8
7	8 1/4	24	8	8	0 1/4	25	8 5/8	8	4 1/4	26	9 1/4	8	8 1/4	27	9 3/4
7	8 3/8	24	8 1/4	8	0 3/8	25	9	8	4 3/8	26	9 5/8	8	8 3/8	27	10 1/8
7	8 1/2	24	8 7/8	8	0 1/2	25	9 1/2	8	4 1/2	26	10	8	8 1/2	27	10 5/8
7	8 5/8	24	9 1/4	8	0 5/8	25	9 7/8	8	4 5/8	26	10 3/8	8	8 5/8	27	11
7	8 3/4	24	9 5/8	8	0 3/4	25	10 1/4	8	4 3/4	26	10 3/4	8	8 3/4	27	11 3/8
7	8 7/8	24	10	8	0 7/8	25	10 5/8	8	4 7/8	26	11 1/8	8	8 7/8	27	11 3/4

TABLE VIII.,

For Angle Iron measuring $1\frac{1}{8}$ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
0	9	2	$11\frac{3}{8}$	1	1	3	$11\frac{7}{8}$	1	5	5	$0\frac{3}{8}$	1	9	6	1
0	$9\frac{1}{8}$	2	$11\frac{3}{4}$	1	$1\frac{1}{8}$	4	$0\frac{1}{4}$	1	$5\frac{1}{8}$	5	$0\frac{7}{8}$	1	$9\frac{1}{8}$	6	$1\frac{3}{8}$
0	$9\frac{1}{4}$	3	$0\frac{1}{8}$	1	$1\frac{1}{4}$	4	$0\frac{5}{8}$	1	$5\frac{1}{4}$	5	$1\frac{1}{4}$	1	$9\frac{1}{4}$	6	$1\frac{3}{4}$
0	$9\frac{3}{8}$	3	$0\frac{1}{2}$	1	$1\frac{3}{8}$	4	1	1	$5\frac{3}{8}$	5	$1\frac{1}{8}$	1	$9\frac{3}{8}$	6	$2\frac{1}{4}$
0	$9\frac{1}{2}$	3	$0\frac{7}{8}$	1	$1\frac{1}{2}$	4	$1\frac{3}{8}$	1	$5\frac{1}{2}$	5	2	1	$9\frac{1}{2}$	6	$2\frac{5}{8}$
0	$9\frac{5}{8}$	3	$1\frac{1}{4}$	1	$1\frac{5}{8}$	4	$1\frac{7}{8}$	1	$5\frac{5}{8}$	5	$2\frac{3}{8}$	1	$9\frac{5}{8}$	6	3
0	$9\frac{3}{4}$	3	$1\frac{5}{8}$	1	$1\frac{3}{4}$	4	$2\frac{1}{4}$	1	$5\frac{3}{4}$	5	$2\frac{3}{4}$	1	$9\frac{3}{4}$	6	$3\frac{3}{8}$
0	$9\frac{7}{8}$	3	2	1	$1\frac{7}{8}$	4	$2\frac{5}{8}$	1	$5\frac{7}{8}$	5	$3\frac{1}{8}$	1	$9\frac{7}{8}$	6	$3\frac{3}{4}$
0	10	3	$2\frac{1}{2}$	1	2	4	3	1	6	5	$3\frac{5}{8}$	1	10	6	$4\frac{1}{8}$
0	$10\frac{1}{8}$	3	$2\frac{7}{8}$	1	$2\frac{1}{8}$	4	$3\frac{3}{8}$	1	$6\frac{1}{8}$	5	4	1	$10\frac{1}{8}$	6	$4\frac{1}{2}$
0	$10\frac{1}{4}$	3	$3\frac{1}{4}$	1	$2\frac{1}{4}$	4	$3\frac{3}{4}$	1	$6\frac{1}{4}$	5	$4\frac{3}{8}$	1	$10\frac{1}{4}$	6	$4\frac{7}{8}$
0	$10\frac{3}{8}$	3	$3\frac{5}{8}$	1	$2\frac{3}{8}$	4	$4\frac{1}{8}$	1	$6\frac{3}{8}$	5	$4\frac{3}{4}$	1	$10\frac{3}{8}$	6	$5\frac{3}{8}$
0	$10\frac{1}{2}$	3	4	1	$2\frac{1}{2}$	4	$4\frac{1}{2}$	1	$6\frac{1}{2}$	5	$5\frac{1}{8}$	1	$10\frac{1}{2}$	6	$5\frac{3}{4}$
0	$10\frac{5}{8}$	3	$4\frac{3}{8}$	1	$2\frac{5}{8}$	4	5	1	$6\frac{5}{8}$	5	$5\frac{1}{2}$	1	$10\frac{5}{8}$	6	$6\frac{1}{8}$
0	$10\frac{3}{4}$	3	$4\frac{7}{8}$	1	$2\frac{3}{4}$	4	$5\frac{3}{8}$	1	$6\frac{3}{4}$	5	$5\frac{7}{8}$	1	$10\frac{3}{4}$	6	$6\frac{1}{2}$
0	$10\frac{7}{8}$	3	$5\frac{1}{4}$	1	$2\frac{7}{8}$	4	$5\frac{3}{4}$	1	$6\frac{7}{8}$	5	$6\frac{3}{8}$	1	$10\frac{7}{8}$	6	$6\frac{7}{8}$
0	11	3	$5\frac{5}{8}$	1	3	4	$6\frac{1}{8}$	1	7	5	$6\frac{3}{4}$	1	11	6	$7\frac{1}{4}$
0	$11\frac{1}{8}$	3	6	1	$3\frac{1}{8}$	4	$6\frac{1}{2}$	1	$7\frac{1}{8}$	5	$7\frac{1}{8}$	1	$11\frac{1}{8}$	6	$7\frac{5}{8}$
0	$11\frac{1}{4}$	3	$6\frac{3}{8}$	1	$3\frac{1}{4}$	4	7	1	$7\frac{1}{4}$	5	$7\frac{1}{2}$	1	$11\frac{1}{4}$	6	$8\frac{1}{8}$
0	$11\frac{3}{8}$	3	$6\frac{3}{4}$	1	$3\frac{3}{8}$	4	$7\frac{3}{8}$	1	$7\frac{3}{8}$	5	8	1	$11\frac{3}{8}$	6	$8\frac{1}{2}$
0	$11\frac{1}{2}$	3	$7\frac{1}{8}$	1	$3\frac{1}{2}$	4	$7\frac{3}{4}$	1	$7\frac{1}{2}$	5	$8\frac{3}{8}$	1	$11\frac{1}{2}$	6	$8\frac{7}{8}$
0	$11\frac{5}{8}$	3	$7\frac{5}{8}$	1	$3\frac{5}{8}$	4	$8\frac{1}{8}$	1	$7\frac{5}{8}$	5	$8\frac{3}{4}$	1	$11\frac{5}{8}$	6	$9\frac{1}{4}$
0	$11\frac{3}{4}$	3	8	1	$3\frac{3}{4}$	4	$8\frac{1}{2}$	1	$7\frac{3}{4}$	5	$9\frac{1}{8}$	1	$11\frac{3}{4}$	6	$9\frac{5}{8}$
0	$11\frac{7}{8}$	3	$8\frac{3}{8}$	1	$3\frac{7}{8}$	4	$8\frac{7}{8}$	1	$7\frac{7}{8}$	5	$9\frac{1}{2}$	1	$11\frac{7}{8}$	6	10
1	0	3	$8\frac{3}{4}$	1	4	4	$9\frac{1}{4}$	1	8	5	$9\frac{7}{8}$	2	0	6	$10\frac{1}{8}$
1	$0\frac{1}{8}$	3	$9\frac{1}{8}$	1	$4\frac{1}{8}$	4	$9\frac{3}{8}$	1	$8\frac{1}{8}$	5	$10\frac{1}{4}$	2	$0\frac{1}{8}$	6	$10\frac{7}{8}$
1	$0\frac{1}{4}$	3	$9\frac{1}{2}$	1	$4\frac{1}{4}$	4	$10\frac{1}{8}$	1	$8\frac{1}{4}$	5	$10\frac{5}{8}$	2	$0\frac{1}{4}$	6	$11\frac{1}{4}$
1	$0\frac{3}{8}$	3	$9\frac{7}{8}$	1	$4\frac{3}{8}$	4	$10\frac{1}{2}$	1	$8\frac{3}{8}$	5	11	2	$0\frac{3}{8}$	6	$11\frac{5}{8}$
1	$0\frac{1}{2}$	3	$10\frac{3}{8}$	1	$4\frac{1}{2}$	4	$10\frac{7}{8}$	1	$8\frac{1}{2}$	5	$11\frac{1}{2}$	2	$0\frac{1}{2}$	7	0
1	$0\frac{5}{8}$	3	$10\frac{3}{4}$	1	$4\frac{5}{8}$	4	$11\frac{1}{4}$	1	$8\frac{5}{8}$	5	$11\frac{7}{8}$	2	$0\frac{5}{8}$	7	$0\frac{3}{8}$
1	$0\frac{3}{4}$	3	$11\frac{1}{8}$	1	$4\frac{3}{4}$	4	$11\frac{5}{8}$	1	$8\frac{3}{4}$	6	$0\frac{1}{4}$	2	$0\frac{3}{4}$	7	$0\frac{3}{4}$
1	$0\frac{7}{8}$	3	$11\frac{1}{2}$	1	$4\frac{7}{8}$	5	0	1	$8\frac{7}{8}$	6	$0\frac{5}{8}$	2	$0\frac{7}{8}$	7	$1\frac{1}{8}$

For Angle Iron measuring $1\frac{1}{8}$ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
2	1	7	$1\frac{1}{8}$	2	5	8	$2\frac{1}{8}$	2	9	9	$2\frac{3}{4}$	3	1	10	$3\frac{1}{4}$
2	$1\frac{1}{8}$	7	2	2	$5\frac{1}{8}$	8	$2\frac{1}{2}$	2	$9\frac{1}{8}$	9	$3\frac{1}{8}$	3	$1\frac{1}{8}$	10	$3\frac{5}{8}$
2	$1\frac{1}{4}$	7	$2\frac{3}{8}$	2	$5\frac{1}{4}$	8	$2\frac{7}{8}$	2	$9\frac{1}{4}$	9	$3\frac{1}{2}$	3	$1\frac{1}{4}$	10	4
2	$1\frac{3}{8}$	7	$2\frac{3}{4}$	2	$5\frac{3}{8}$	8	$3\frac{3}{8}$	2	$9\frac{3}{8}$	9	$3\frac{7}{8}$	3	$1\frac{3}{8}$	10	$4\frac{1}{2}$
2	$1\frac{1}{2}$	7	$3\frac{1}{8}$	2	$5\frac{1}{2}$	8	$3\frac{3}{4}$	2	$9\frac{1}{2}$	9	$4\frac{1}{4}$	3	$1\frac{1}{2}$	10	$4\frac{7}{8}$
2	$1\frac{5}{8}$	7	$3\frac{1}{2}$	2	$5\frac{5}{8}$	8	$4\frac{1}{8}$	2	$9\frac{5}{8}$	9	$4\frac{5}{8}$	3	$1\frac{5}{8}$	10	$5\frac{1}{4}$
2	$1\frac{3}{4}$	7	$3\frac{7}{8}$	2	$5\frac{3}{4}$	8	$4\frac{1}{2}$	2	$9\frac{3}{4}$	9	5	3	$1\frac{3}{4}$	10	$5\frac{5}{8}$
2	$1\frac{7}{8}$	7	$4\frac{3}{8}$	2	$5\frac{7}{8}$	8	$4\frac{7}{8}$	2	$9\frac{7}{8}$	9	$5\frac{1}{2}$	3	$1\frac{7}{8}$	10	6
2	2	7	$4\frac{3}{4}$	2	6	8	$5\frac{1}{4}$	2	10	9	$5\frac{7}{8}$	3	2	10	$6\frac{3}{8}$
2	$2\frac{1}{8}$	7	$5\frac{1}{8}$	2	$6\frac{1}{8}$	8	$5\frac{5}{8}$	2	$10\frac{1}{8}$	9	$6\frac{1}{4}$	3	$2\frac{1}{8}$	10	$6\frac{7}{8}$
2	$2\frac{1}{4}$	7	$5\frac{1}{2}$	2	$6\frac{1}{4}$	8	6	2	$10\frac{1}{4}$	9	$6\frac{5}{8}$	3	$2\frac{1}{4}$	10	$7\frac{1}{4}$
2	$2\frac{3}{8}$	7	$5\frac{7}{8}$	2	$6\frac{3}{8}$	8	$6\frac{1}{2}$	2	$10\frac{3}{8}$	9	7	3	$2\frac{3}{8}$	10	$7\frac{5}{8}$
2	$2\frac{1}{2}$	7	$6\frac{1}{4}$	2	$6\frac{1}{2}$	8	$6\frac{7}{8}$	2	$10\frac{1}{2}$	9	$7\frac{3}{8}$	3	$2\frac{1}{2}$	10	8
2	$2\frac{5}{8}$	7	$6\frac{5}{8}$	2	$6\frac{5}{8}$	8	$7\frac{1}{4}$	2	$10\frac{5}{8}$	9	$7\frac{7}{8}$	3	$2\frac{5}{8}$	10	$8\frac{3}{8}$
2	$2\frac{3}{4}$	7	7	2	$6\frac{3}{4}$	8	$7\frac{5}{8}$	2	$10\frac{3}{4}$	9	$8\frac{1}{4}$	3	$2\frac{3}{4}$	10	$8\frac{3}{4}$
2	$2\frac{7}{8}$	7	$7\frac{1}{2}$	2	$6\frac{7}{8}$	8	8	2	$10\frac{7}{8}$	9	$8\frac{5}{8}$	3	$2\frac{7}{8}$	10	$9\frac{1}{8}$
2	3	7	$7\frac{7}{8}$	2	7	8	$8\frac{3}{8}$	2	11	9	9	3	3	10	$9\frac{1}{2}$
2	$3\frac{1}{8}$	7	$8\frac{1}{4}$	2	$7\frac{1}{8}$	8	$8\frac{7}{8}$	2	$11\frac{1}{8}$	9	$9\frac{3}{8}$	3	$3\frac{1}{8}$	10	$9\frac{7}{8}$
2	$3\frac{1}{4}$	7	$8\frac{5}{8}$	2	$7\frac{1}{4}$	8	$9\frac{1}{4}$	2	$11\frac{1}{4}$	9	$9\frac{3}{4}$	3	$3\frac{1}{4}$	10	$10\frac{3}{8}$
2	$3\frac{3}{8}$	7	9	2	$7\frac{3}{8}$	8	$9\frac{5}{8}$	2	$11\frac{3}{8}$	9	$10\frac{1}{8}$	3	$3\frac{3}{8}$	10	$10\frac{3}{4}$
2	$3\frac{1}{2}$	7	$9\frac{3}{8}$	2	$7\frac{1}{2}$	8	10	2	$11\frac{1}{2}$	9	$10\frac{1}{2}$	3	$3\frac{1}{2}$	10	$11\frac{1}{8}$
2	$3\frac{5}{8}$	7	$9\frac{3}{4}$	2	$7\frac{5}{8}$	8	$10\frac{3}{8}$	2	$11\frac{5}{8}$	9	$10\frac{7}{8}$	3	$3\frac{5}{8}$	10	$11\frac{1}{4}$
2	$3\frac{3}{4}$	7	$10\frac{1}{4}$	2	$7\frac{3}{4}$	8	$10\frac{3}{4}$	2	$11\frac{3}{4}$	9	$11\frac{3}{8}$	3	$3\frac{3}{4}$	10	$11\frac{7}{8}$
2	$3\frac{7}{8}$	7	$10\frac{5}{8}$	2	$7\frac{7}{8}$	8	$11\frac{1}{8}$	2	$11\frac{7}{8}$	9	$11\frac{3}{4}$	3	$3\frac{7}{8}$	11	$0\frac{3}{8}$
2	4	7	11	2	8	8	$11\frac{1}{2}$	3	0	10	$0\frac{1}{8}$	3	4	11	$0\frac{3}{4}$
2	$4\frac{1}{8}$	7	$11\frac{3}{8}$	2	$8\frac{1}{8}$	9	0	3	$0\frac{1}{8}$	10	$0\frac{1}{2}$	3	$4\frac{1}{8}$	11	$1\frac{1}{8}$
2	$4\frac{1}{4}$	7	$11\frac{3}{4}$	2	$8\frac{1}{4}$	9	$0\frac{3}{8}$	3	$0\frac{1}{4}$	10	$0\frac{7}{8}$	3	$4\frac{1}{4}$	11	$1\frac{1}{2}$
2	$4\frac{3}{8}$	8	$0\frac{1}{8}$	2	$8\frac{3}{8}$	9	$0\frac{3}{4}$	3	$0\frac{3}{8}$	10	$1\frac{3}{8}$	3	$4\frac{3}{8}$	11	$1\frac{7}{8}$
2	$4\frac{1}{2}$	8	$0\frac{1}{2}$	2	$8\frac{1}{2}$	9	$1\frac{1}{8}$	3	$0\frac{1}{2}$	10	$1\frac{3}{4}$	3	$4\frac{1}{2}$	11	$2\frac{1}{4}$
2	$4\frac{5}{8}$	8	1	2	$8\frac{5}{8}$	9	$1\frac{1}{2}$	3	$0\frac{5}{8}$	10	$2\frac{1}{8}$	3	$4\frac{5}{8}$	11	$2\frac{5}{8}$
2	$4\frac{3}{4}$	8	$1\frac{3}{8}$	2	$8\frac{3}{4}$	9	$1\frac{7}{8}$	3	$0\frac{3}{4}$	10	$2\frac{1}{2}$	3	$4\frac{3}{4}$	11	3
2	$4\frac{7}{8}$	8	$1\frac{3}{4}$	2	$8\frac{7}{8}$	9	$2\frac{3}{8}$	3	$0\frac{7}{8}$	10	$2\frac{7}{8}$	3	$4\frac{7}{8}$	11	$3\frac{1}{8}$

For Angle Iron measuring 1⅛ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
3	5	11	3 7/8	3	9	12	4 3/8	4	1	13	5	4	5	14	5 1/8
3	5 1/8	11	4 1/4	3	9 1/8	12	4 3/4	4	1 1/8	13	5 3/8	4	5 1/8	14	5 7/8
3	5 1/4	11	4 5/8	3	9 1/4	12	5 1/4	4	1 1/4	13	5 3/4	4	5 1/4	14	6 3/8
3	5 3/8	11	5	3	9 3/8	12	5 5/8	4	1 3/8	13	6 1/8	4	5 3/8	14	6 3/4
3	5 1/2	11	5 3/8	3	9 1/2	12	6	4	1 1/2	13	6 1/2	4	5 1/2	14	7 1/8
3	5 5/8	11	5 3/4	3	9 5/8	12	6 3/8	4	1 5/8	13	7	4	5 5/8	14	7 1/2
3	5 3/4	11	6 1/4	3	9 3/4	12	6 3/4	4	1 3/4	13	7 3/8	4	5 3/4	14	7 7/8
3	5 7/8	11	6 5/8	3	9 7/8	12	7 1/8	4	1 7/8	13	7 3/4	4	5 7/8	14	8 1/4
3	6	11	7	3	10	12	7 1/2	4	2	13	8 1/8	4	6	14	8 3/4
3	6 1/8	11	7 3/8	3	10 1/8	12	7 7/8	4	2 1/8	13	8 1/2	4	6 1/8	14	9 1/8
3	6 1/4	11	7 3/4	3	10 1/4	12	8 3/8	4	2 1/4	13	8 7/8	4	6 1/4	14	9 1/2
3	6 3/8	11	8 1/8	3	10 3/8	12	8 3/4	4	2 3/8	13	9 1/4	4	6 3/8	14	9 7/8
3	6 1/2	11	8 1/2	3	10 1/2	12	9 1/8	4	2 1/2	13	9 5/8	4	6 1/2	14	10 1/4
3	6 5/8	11	8 7/8	3	10 5/8	12	9 1/2	4	2 5/8	13	10 1/8	4	6 5/8	14	10 5/8
3	6 3/4	11	9 3/8	3	10 3/4	12	9 7/8	4	2 3/4	13	10 1/2	4	6 3/4	14	11
3	6 7/8	11	9 3/4	3	10 7/8	12	10 3/8	4	2 7/8	13	10 7/8	4	6 7/8	14	11 1/2
3	7	11	10 1/8	3	11	12	10 3/4	4	3	13	11 1/4	4	7	14	11 7/8
3	7 1/8	11	10 1/2	3	11 1/8	12	11 1/8	4	3 1/8	13	11 5/8	4	7 1/8	15	0 1/4
3	7 1/4	11	10 7/8	3	11 1/4	12	11 1/2	4	3 1/4	14	0	4	7 1/4	15	0 5/8
3	7 3/8	11	11 1/4	3	11 3/8	12	11 7/8	4	3 3/8	14	0 3/8	4	7 3/8	15	1
3	7 1/2	11	11 5/8	3	11 1/2	13	0 1/4	4	3 1/2	14	0 7/8	4	7 1/2	15	1 3/8
3	7 5/8	12	0 1/8	3	11 5/8	13	0 5/8	4	3 5/8	14	1 1/4	4	7 5/8	15	1 7/8
3	7 3/4	12	0 1/2	3	11 3/4	13	1	4	3 3/4	14	1 5/8	4	7 3/4	15	2 1/4
3	7 7/8	12	0 7/8	3	11 7/8	13	1 1/2	4	3 7/8	14	2	4	7 7/8	15	2 5/8
3	8	12	1 1/4	4	0	13	1 7/8	4	4	14	2 3/8	4	8	15	3
3	8 1/8	12	1 5/8	4	0 1/8	13	2 1/4	4	4 1/8	14	2 3/4	4	8 1/8	15	3 3/8
3	8 1/4	12	2	4	0 1/4	13	2 5/8	4	4 1/4	14	3 1/8	4	8 1/4	15	3 3/4
3	8 3/8	12	2 3/8	4	0 3/8	13	3	4	4 3/8	14	3 1/2	4	8 3/8	15	4 1/8
3	8 1/2	12	2 7/8	4	0 1/2	13	3 3/8	4	4 1/2	14	4	4	8 1/2	15	4 1/2
3	8 5/8	12	3 1/4	4	0 5/8	13	3 3/4	4	4 5/8	14	4 3/8	4	8 5/8	15	4 7/8
3	8 3/4	12	3 5/8	4	0 3/4	13	4 1/4	4	4 3/4	14	4 3/4	4	8 3/4	15	5 3/8
3	8 7/8	12	4	4	0 7/8	13	4 5/8	4	4 7/8	14	5 1/8	4	8 7/8	15	5 3/4

For Angle Iron measuring 1⅛ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
4	9	15	6⅛	5	1	16	6⅝	5	5	17	7¼	5	9	18	7⅞
4	9⅛	15	6¼	5	1⅛	16	7	5	5⅛	17	7⅝	5	9⅛	18	8¼
4	9¼	15	6⅞	5	1¼	16	7½	5	5¼	17	8	5	9¼	18	8⅝
4	9⅜	15	7¼	5	1⅜	16	7⅞	5	5⅜	17	8⅜	5	9⅜	18	9
4	9½	15	7¾	5	1½	16	8¼	5	5½	17	8⅞	5	9½	18	9⅜
4	9⅝	15	8⅛	5	1⅝	16	8⅝	5	5⅝	17	9¼	5	9⅝	18	9¾
4	9¾	15	8½	5	1¾	16	9	5	5¾	17	9⅝	5	9¾	18	10⅛
4	9⅞	15	8⅞	5	1⅞	16	9⅜	5	5⅞	17	10	5	9⅞	18	10½
4	10	15	9¼	5	2	16	9⅞	5	6	17	10⅜	5	10	18	11
4	10⅛	15	9⅝	5	2⅛	16	10¼	5	6⅛	17	10¾	5	10⅛	18	11⅜
4	10¼	15	10	5	2¼	16	10⅝	5	6¼	17	11⅛	5	10¼	18	11¾
4	10⅜	15	10⅜	5	2⅜	16	11	5	6⅜	17	11½	5	10⅜	19	0⅛
4	10½	15	10⅞	5	2½	16	11⅜	5	6½	18	0	5	10½	19	0½
4	10⅝	15	11¼	5	2⅝	16	11¾	5	6⅝	18	0⅜	5	10⅝	19	0⅞
4	10¾	15	11⅝	5	2¾	17	0⅛	5	6¾	18	0¾	5	10¾	19	1⅜
4	10⅞	16	0	5	2⅞	17	0⅝	5	6⅞	18	1⅛	5	10⅞	19	1¾
4	11	16	0⅜	5	3	17	1	5	7	18	1½	5	11	19	2⅛
4	11⅛	16	0¾	5	3⅛	17	1⅜	5	7⅛	18	1⅞	5	11⅛	19	2½
4	11¼	16	1⅛	5	3¼	17	1¾	5	7¼	18	2⅜	5	11¼	19	2⅞
4	11⅜	16	1⅝	5	3⅜	17	2⅛	5	7⅜	18	2¾	5	11⅜	19	3¼
4	11½	16	2	5	3½	17	2½	5	7½	18	3⅛	5	11½	19	3⅝
4	11⅝	16	2⅜	5	3⅝	17	2⅞	5	7⅝	18	3½	5	11⅝	19	4
4	11¾	16	2¾	5	3¾	17	3⅜	5	7¾	18	3⅞	5	11¾	19	4⅓
4	11⅞	16	3⅛	5	3⅞	17	3¾	5	7⅞	18	4¼	5	11⅞	19	4⅞
5	0	16	3½	5	4	17	4⅛	5	8	18	4⅝	6	0	19	5¼
5	0⅛	16	3⅞	5	4⅛	17	4½	5	8⅛	18	5	6	0⅛	19	5⅝
5	0¼	16	4⅜	5	4¼	17	4⅞	5	8¼	18	5½	6	0¼	19	6
5	0⅜	16	4¾	5	4⅜	17	5¼	5	8⅜	18	5⅞	6	0⅜	19	6⅜
5	0½	16	5⅛	5	4½	17	5⅝	5	8½	18	6¼	6	0½	19	6⅞
5	0⅝	16	5½	5	4⅝	17	6	5	8⅝	18	6⅝	6	0⅝	19	7¼
5	0¾	16	5⅞	5	4¾	17	6½	5	8¾	18	7	6	0¾	19	7⅝
5	0⅞	16	6¼	5	4⅞	17	6⅞	5	8⅞	18	7⅜	6	0⅞	19	8

For ANGLE IRON measuring $1\frac{1}{8}$ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
6	1	19	$8\frac{3}{8}$	6	5	20	9	6	9	21	$9\frac{1}{2}$	7	1	22	$10\frac{1}{8}$
6	$1\frac{1}{8}$	19	$8\frac{3}{4}$	6	$5\frac{1}{8}$	20	$9\frac{3}{8}$	6	$9\frac{1}{8}$	21	$9\frac{7}{8}$	7	$1\frac{1}{8}$	22	$10\frac{1}{2}$
6	$1\frac{1}{4}$	19	$9\frac{1}{8}$	6	$5\frac{1}{4}$	20	$9\frac{3}{4}$	6	$9\frac{1}{4}$	21	$10\frac{3}{8}$	7	$1\frac{1}{4}$	22	$10\frac{7}{8}$
6	$1\frac{3}{8}$	19	$9\frac{5}{8}$	6	$5\frac{3}{8}$	20	$10\frac{1}{8}$	6	$9\frac{3}{8}$	21	$10\frac{3}{4}$	7	$1\frac{3}{8}$	22	$11\frac{1}{4}$
6	$1\frac{1}{2}$	19	10	6	$5\frac{1}{2}$	20	$10\frac{1}{2}$	6	$9\frac{1}{2}$	21	$11\frac{1}{8}$	7	$1\frac{1}{2}$	22	$11\frac{5}{8}$
6	$1\frac{5}{8}$	19	$10\frac{3}{8}$	6	$5\frac{5}{8}$	20	$10\frac{7}{8}$	6	$9\frac{5}{8}$	21	$11\frac{1}{2}$	7	$1\frac{5}{8}$	23	0
6	$1\frac{3}{4}$	19	$10\frac{3}{4}$	6	$5\frac{3}{4}$	20	$11\frac{3}{8}$	6	$9\frac{3}{4}$	21	$11\frac{7}{8}$	7	$1\frac{3}{4}$	23	$0\frac{1}{2}$
6	$1\frac{7}{8}$	19	$11\frac{1}{8}$	6	$5\frac{7}{8}$	20	$11\frac{3}{4}$	6	$9\frac{7}{8}$	22	$0\frac{1}{4}$	7	$1\frac{7}{8}$	23	$0\frac{7}{8}$
6	2	19	$11\frac{1}{2}$	6	6	21	$0\frac{1}{8}$	6	10	22	$0\frac{5}{8}$	7	2	23	$1\frac{1}{4}$
6	$2\frac{1}{8}$	19	$11\frac{7}{8}$	6	$6\frac{1}{8}$	21	$0\frac{1}{2}$	6	$10\frac{1}{8}$	22	1	7	$2\frac{1}{8}$	23	$1\frac{5}{8}$
6	$2\frac{1}{4}$	20	$0\frac{3}{8}$	6	$6\frac{1}{4}$	21	$0\frac{7}{8}$	6	$10\frac{1}{4}$	22	$1\frac{1}{2}$	7	$2\frac{1}{4}$	23	2
6	$2\frac{3}{8}$	20	$0\frac{3}{4}$	6	$6\frac{3}{8}$	21	$1\frac{1}{4}$	6	$10\frac{3}{8}$	22	$1\frac{7}{8}$	7	$2\frac{3}{8}$	23	$2\frac{3}{8}$
6	$2\frac{1}{2}$	20	$1\frac{1}{8}$	6	$6\frac{1}{2}$	21	$1\frac{5}{8}$	6	$10\frac{1}{2}$	22	$2\frac{1}{4}$	7	$2\frac{1}{2}$	23	$2\frac{3}{4}$
6	$2\frac{5}{8}$	20	$1\frac{1}{2}$	6	$6\frac{5}{8}$	21	2	6	$10\frac{5}{8}$	22	$2\frac{5}{8}$	7	$2\frac{5}{8}$	23	$3\frac{1}{4}$
6	$2\frac{3}{4}$	20	$1\frac{7}{8}$	6	$6\frac{3}{4}$	21	$2\frac{1}{8}$	6	$10\frac{3}{4}$	22	3	7	$2\frac{3}{4}$	23	$3\frac{5}{8}$
6	$2\frac{7}{8}$	20	$2\frac{1}{4}$	6	$6\frac{7}{8}$	21	$2\frac{7}{8}$	6	$10\frac{7}{8}$	22	$3\frac{3}{8}$	7	$2\frac{7}{8}$	23	4
6	3	20	$2\frac{5}{8}$	6	7	21	$3\frac{1}{4}$	6	11	22	$3\frac{7}{8}$	7	3	23	$4\frac{3}{8}$
6	$3\frac{1}{8}$	20	3	6	$7\frac{1}{8}$	21	$3\frac{5}{8}$	6	$11\frac{1}{8}$	22	$4\frac{1}{4}$	7	$3\frac{1}{8}$	23	$4\frac{3}{4}$
6	$3\frac{1}{4}$	20	$3\frac{1}{2}$	6	$7\frac{1}{4}$	21	4	6	$11\frac{1}{4}$	22	$4\frac{5}{8}$	7	$3\frac{1}{4}$	23	$5\frac{1}{8}$
6	$3\frac{3}{8}$	20	$3\frac{7}{8}$	6	$7\frac{3}{8}$	21	$4\frac{3}{8}$	6	$11\frac{3}{8}$	22	5	7	$3\frac{3}{8}$	23	$5\frac{1}{2}$
6	$3\frac{1}{2}$	20	$4\frac{1}{4}$	6	$7\frac{1}{2}$	21	$4\frac{3}{4}$	6	$11\frac{1}{2}$	22	$5\frac{3}{8}$	7	$3\frac{1}{2}$	23	6
6	$3\frac{5}{8}$	20	$4\frac{5}{8}$	6	$7\frac{5}{8}$	21	$5\frac{1}{8}$	6	$11\frac{5}{8}$	22	$5\frac{3}{4}$	7	$3\frac{5}{8}$	23	$6\frac{3}{8}$
6	$3\frac{3}{4}$	20	5	6	$7\frac{3}{4}$	21	$5\frac{1}{2}$	6	$11\frac{3}{4}$	22	$6\frac{1}{8}$	7	$3\frac{3}{4}$	23	$6\frac{3}{4}$
6	$3\frac{7}{8}$	20	$5\frac{3}{8}$	6	$7\frac{7}{8}$	21	6	6	$11\frac{7}{8}$	22	$6\frac{1}{2}$	7	$3\frac{7}{8}$	23	$7\frac{1}{8}$
6	4	20	$5\frac{7}{8}$	6	8	21	$6\frac{3}{8}$	7	0	22	7	7	4	23	$7\frac{1}{2}$
6	$4\frac{1}{8}$	20	$6\frac{1}{4}$	6	$8\frac{1}{8}$	21	$6\frac{3}{4}$	7	$0\frac{1}{8}$	22	$7\frac{3}{8}$	7	$4\frac{1}{8}$	23	$7\frac{7}{8}$
6	$4\frac{1}{4}$	20	$6\frac{5}{8}$	6	$8\frac{1}{4}$	21	$7\frac{1}{8}$	7	$0\frac{1}{4}$	22	$7\frac{3}{4}$	7	$4\frac{1}{4}$	23	$8\frac{1}{4}$
6	$4\frac{3}{8}$	20	7	6	$8\frac{3}{8}$	21	$7\frac{5}{8}$	7	$0\frac{3}{8}$	22	$8\frac{1}{8}$	7	$4\frac{3}{8}$	23	$8\frac{3}{4}$
6	$4\frac{1}{2}$	20	$7\frac{3}{8}$	6	$8\frac{1}{2}$	21	8	7	$0\frac{1}{2}$	22	$8\frac{1}{2}$	7	$4\frac{1}{2}$	23	$9\frac{1}{8}$
6	$4\frac{5}{8}$	20	$7\frac{3}{4}$	6	$8\frac{5}{8}$	21	$8\frac{3}{8}$	7	$0\frac{5}{8}$	22	$8\frac{7}{8}$	7	$4\frac{5}{8}$	23	$9\frac{1}{2}$
6	$4\frac{3}{4}$	20	$8\frac{1}{8}$	6	$8\frac{3}{4}$	21	$8\frac{3}{4}$	7	$0\frac{3}{4}$	22	$9\frac{1}{4}$	7	$4\frac{3}{4}$	23	$9\frac{7}{8}$
6	$4\frac{7}{8}$	20	$8\frac{1}{2}$	6	$8\frac{7}{8}$	21	$9\frac{1}{8}$	7	$0\frac{7}{8}$	22	$9\frac{3}{4}$	7	$4\frac{7}{8}$	23	$10\frac{1}{4}$

For Angle Iron measuring 1⅛ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
7	5	23	10⅝	7	9	24	11¼	8	1	25	11¾	8	5	27	0⅜
7	5⅛	23	11	7	9⅛	24	11⅝	8	1⅛	26	0⅛	8	5⅛	27	0¾
7	5¼	23	11½	7	9¼	25	0	8	1¼	26	0⅝	8	5¼	27	1⅛
7	5⅜	23	11⅞	7	9⅜	25	0⅜	8	1⅜	26	1	8	5⅜	27	1½
7	5½	24	0¼	7	9½	25	0¾	8	1½	26	1⅜	8	5½	27	1⅞
7	5⅝	24	0⅝	7	9⅝	25	1¼	8	1⅝	26	1¾	8	5⅝	27	2⅜
7	5¾	24	1	7	9¾	25	1⅝	8	1¾	26	2⅛	8	5¾	27	2¾
7	5⅞	24	1⅜	7	9⅞	25	2	8	1⅞	26	2½	8	5⅞	27	3⅛
7	6	24	1¾	7	10	25	2⅜	8	2	26	2⅞	8	6	27	3½
7	6⅛	24	2¼	7	10⅛	25	2¾	8	2⅛	26	3⅜	8	6⅛	27	3⅞
7	6¼	24	2⅝	7	10¼	25	3⅛	8	2¼	26	3¾	8	6¼	27	4¼
7	6⅜	24	3	7	10⅜	25	3½	8	2⅜	26	4⅛	8	6⅜	27	4⅝
7	6½	24	3⅜	7	10½	25	3⅞	8	2½	26	4½	8	6½	27	5
7	6⅝	24	3¾	7	10⅝	25	4⅜	8	2⅝	26	4⅞	8	6⅝	27	5⅜
7	6¾	24	4⅛	7	10¾	25	4¾	8	2¾	26	5¼	8	6¾	27	5⅞
7	6⅞	24	4½	7	10⅞	25	5⅛	8	2⅞	26	5⅝	8	6⅞	27	6¼
7	7	24	4⅞	7	11	25	5½	8	3	26	6	8	7	27	6⅝
7	7⅛	24	5⅜	7	11⅛	25	5⅞	8	3⅛	26	6½	8	7⅛	27	7
7	7¼	24	5¾	7	11¼	25	6¼	8	3¼	26	6⅞	8	7¼	27	7⅜
7	7⅜	24	6⅛	7	11⅜	25	6⅝	8	3⅜	26	7¼	8	7⅜	27	7⅞
7	7½	24	6½	7	11½	25	7	8	3½	26	7⅝	8	7½	27	8¼
7	7⅝	24	6⅞	7	11⅝	25	7½	8	3⅝	26	8	8	7⅝	27	8⅝
7	7¾	24	7¼	7	11¾	25	7⅞	8	3¾	26	8⅜	8	7¾	27	9
7	7⅞	24	7⅝	7	11⅞	25	8¼	8	3⅞	26	8⅞	8	7⅞	27	9⅜
7	8	24	8	8	0	25	8⅝	8	4	26	9¼	8	8	27	9¾
7	8⅛	24	8½	8	0⅛	25	9	8	4⅛	26	9⅝	8	8⅛	27	10⅛
7	8¼	24	8⅞	8	0¼	25	9½	8	4¼	26	10	8	8¼	27	10⅝
7	8⅜	24	9¼	8	0⅜	25	9⅞	8	4⅜	26	10⅜	8	8⅜	27	11
7	8½	24	9⅝	8	0½	25	10¼	8	4½	26	10¾	8	8½	27	11⅜
7	8⅝	24	10	8	0⅝	25	10⅝	8	4⅝	26	11⅛	8	8⅝	27	11¾
7	8¾	24	10½	8	0¾	25	11	8	4¾	26	11½	8	8¾	28	0⅛
7	8⅞	24	10⅞	8	0⅞	25	11⅜	8	4⅞	27	0	8	8⅞	28	0½

TABLE IX.,

For Angle Iron measuring 1¼ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
0	9	3	0⅛	1	1	4	0⅛	1	5	5	1¼	1	9	6	1¾
0	9⅛	3	0½	1	1⅛	4	1	1	5⅛	5	1⅛	1	9⅛	6	2¼
0	9¼	3	0⅞	1	1¼	4	1⅛	1	5¼	5	2	1	9¼	6	2⅛
0	9⅜	3	1¼	1	1⅜	4	1⅞	1	5⅜	5	2⅛	1	9⅜	6	3
0	9½	3	1⅛	1	1½	4	2¼	1	5½	5	2¾	1	9½	6	3⅛
0	9⅝	3	2	1	1⅝	4	2⅛	1	5⅝	5	3⅛	1	9⅝	6	3¾
0	9¾	3	2½	1	1¾	4	3	1	5¾	5	3⅝	1	9¾	6	4⅛
0	9⅞	3	2⅞	1	1⅞	4	3⅛	1	5⅞	5	4	1	9⅞	6	4½
0	10	3	3¼	1	2	4	3¾	1	6	5	4⅜	1	10	6	4⅞
0	10⅛	3	3⅝	1	2⅛	4	4⅛	1	6⅛	5	4¾	1	10⅛	6	5⅜
0	10¼	3	4	1	2¼	4	4½	1	6¼	5	5⅛	1	10¼	6	5¾
0	10⅜	3	4⅜	1	2⅜	4	5	1	6⅜	5	5½	1	10⅜	6	6⅛
0	10½	3	4⅞	1	2½	4	5⅜	1	6½	5	5⅞	1	10½	6	6½
0	10⅝	3	5¼	1	2⅝	4	5¾	1	6⅝	5	6⅜	1	10⅝	6	6⅞
0	10¾	3	5⅝	1	2¾	4	6⅛	1	6¾	5	6¾	1	10¾	6	7¼
0	10⅞	3	6	1	2⅞	4	6½	1	6⅞	5	7⅛	1	10⅞	6	7⅝
0	11	3	6⅜	1	3	4	7	1	7	5	7½	1	11	6	8⅛
0	11⅛	3	6¾	1	3⅛	4	7⅜	1	7⅛	5	8	1	11⅛	6	8½
0	11¼	3	7⅛	1	3¼	4	7¾	1	7¼	5	8⅜	1	11¼	6	8⅞
0	11⅜	3	7⅝	1	3⅜	4	8⅛	1	7⅜	5	8¾	1	11⅜	6	9¼
0	11½	3	8	1	3½	4	8½	1	7½	5	9⅛	1	11½	6	9⅝
0	11⅝	3	8⅜	1	3⅝	4	8⅞	1	7⅝	5	9½	1	11⅝	6	10
0	11¾	3	8¾	1	3¾	4	9¼	1	7¾	5	9⅞	1	11¾	6	10½
0	11⅞	3	9⅛	1	3⅞	4	9⅝	1	7⅞	5	10¼	1	11⅞	6	10⅞
1	0	3	9½	1	4	4	10⅛	1	8	5	10⅝	2	0	6	11¼
1	0⅛	3	9⅞	1	4⅛	4	10½	1	8⅛	5	11	2	0⅛	6	11⅝
1	0¼	3	10⅜	1	4¼	4	10⅞	1	8¼	5	11½	2	0¼	7	0
1	0⅜	3	10¾	1	4⅜	4	11¼	1	8⅜	5	11⅞	2	0⅜	7	0⅜
1	0½	3	11⅛	1	4½	4	11⅝	1	8½	6	0¼	2	0½	7	0¾
1	0⅝	3	11½	1	4⅝	5	0	1	8⅝	6	0⅝	2	0⅝	7	1⅛
1	0¾	3	11⅞	1	4¾	5	0⅜	1	8¾	6	1	2	0¾	7	1½
1	0⅞	4	0¼	1	4⅞	5	0⅞	1	8⅞	6	1⅜	2	0⅞	7	2

For ANGLE IRON measuring $1\frac{1}{4}$ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
2	1	7	$2\frac{3}{8}$	2	5	8	$2\frac{7}{8}$	2	9	9	$3\frac{1}{4}$	3	1	10	4
2	$1\frac{1}{8}$	7	$2\frac{3}{4}$	2	$5\frac{1}{8}$	8	$3\frac{3}{8}$	2	$9\frac{1}{8}$	9	$3\frac{7}{8}$	3	$1\frac{1}{8}$	10	$4\frac{1}{3}$
2	$1\frac{1}{4}$	7	$3\frac{1}{8}$	2	$5\frac{1}{4}$	8	$3\frac{3}{4}$	2	$9\frac{1}{4}$	9	$4\frac{1}{4}$	3	$1\frac{1}{4}$	10	$4\frac{7}{8}$
2	$1\frac{3}{8}$	7	$3\frac{1}{2}$	2	$5\frac{3}{8}$	8	$4\frac{1}{8}$	2	$9\frac{3}{8}$	9	$4\frac{5}{8}$	3	$1\frac{3}{8}$	10	$5\frac{1}{4}$
2	$1\frac{1}{2}$	7	$3\frac{7}{8}$	2	$5\frac{1}{2}$	8	$4\frac{1}{2}$	2	$9\frac{1}{2}$	9	5	3	$1\frac{1}{2}$	10	$5\frac{5}{8}$
2	$1\frac{5}{8}$	7	$4\frac{3}{8}$	2	$5\frac{5}{8}$	8	$4\frac{7}{8}$	2	$9\frac{5}{8}$	9	$5\frac{1}{2}$	3	$1\frac{5}{8}$	10	6
2	$1\frac{3}{4}$	7	$4\frac{3}{4}$	2	$5\frac{3}{4}$	8	$5\frac{1}{4}$	2	$9\frac{3}{4}$	9	$5\frac{7}{8}$	3	$1\frac{3}{4}$	10	$6\frac{3}{8}$
2	$1\frac{7}{8}$	7	$5\frac{1}{8}$	2	$5\frac{7}{8}$	8	$5\frac{5}{8}$	2	$9\frac{7}{8}$	9	$6\frac{1}{4}$	3	$1\frac{7}{8}$	10	$6\frac{7}{8}$
2	2	7	$5\frac{1}{2}$	2	6	8	6	2	10	9	$6\frac{5}{8}$	3	2	10	$7\frac{1}{4}$
2	$2\frac{1}{8}$	7	$5\frac{7}{8}$	2	$6\frac{1}{8}$	8	$6\frac{1}{2}$	2	$10\frac{1}{8}$	9	7	3	$2\frac{1}{8}$	10	$7\frac{5}{8}$
2	$2\frac{1}{4}$	7	$6\frac{1}{4}$	2	$6\frac{1}{4}$	8	$6\frac{7}{8}$	2	$10\frac{1}{4}$	9	$7\frac{3}{8}$	3	$2\frac{1}{4}$	10	8
2	$2\frac{3}{8}$	7	$6\frac{5}{8}$	2	$6\frac{3}{8}$	8	$7\frac{1}{4}$	2	$10\frac{3}{8}$	9	$7\frac{7}{8}$	3	$2\frac{3}{8}$	10	$8\frac{3}{8}$
2	$2\frac{1}{2}$	7	7	2	$6\frac{1}{2}$	8	$7\frac{5}{8}$	2	$10\frac{1}{2}$	9	$8\frac{1}{4}$	3	$2\frac{1}{2}$	10	$8\frac{3}{4}$
2	$2\frac{5}{8}$	7	$7\frac{1}{2}$	2	$6\frac{5}{8}$	8	8	2	$10\frac{5}{8}$	9	$8\frac{5}{8}$	3	$2\frac{5}{8}$	10	$9\frac{1}{8}$
2	$2\frac{3}{4}$	7	$7\frac{7}{8}$	2	$6\frac{3}{4}$	8	$8\frac{3}{8}$	2	$10\frac{3}{4}$	9	9	3	$2\frac{3}{4}$	10	$9\frac{1}{2}$
2	$2\frac{7}{8}$	7	$8\frac{1}{4}$	2	$6\frac{7}{8}$	8	$8\frac{7}{8}$	2	$10\frac{7}{8}$	9	$9\frac{3}{8}$	3	$2\frac{7}{8}$	10	$9\frac{7}{8}$
2	3	7	$8\frac{5}{8}$	2	7	8	$9\frac{1}{4}$	2	11	9	$9\frac{3}{4}$	3	3	10	$10\frac{3}{8}$
2	$3\frac{1}{8}$	7	9	2	$7\frac{1}{8}$	8	$9\frac{5}{8}$	2	$11\frac{1}{8}$	9	$10\frac{1}{8}$	3	$3\frac{1}{8}$	10	$10\frac{3}{4}$
2	$3\frac{1}{4}$	7	$9\frac{3}{8}$	2	$7\frac{1}{4}$	8	10	2	$11\frac{1}{4}$	9	$10\frac{1}{2}$	3	$3\frac{1}{4}$	10	$11\frac{1}{8}$
2	$3\frac{3}{8}$	7	$9\frac{3}{4}$	2	$7\frac{3}{8}$	8	$10\frac{3}{8}$	2	$11\frac{3}{8}$	9	$10\frac{7}{8}$	3	$3\frac{3}{8}$	10	$11\frac{1}{2}$
2	$3\frac{1}{2}$	7	$10\frac{1}{4}$	2	$7\frac{1}{2}$	8	$10\frac{3}{4}$	2	$11\frac{1}{2}$	9	$11\frac{3}{8}$	3	$3\frac{1}{2}$	10	$11\frac{7}{8}$
2	$3\frac{5}{8}$	7	$10\frac{5}{8}$	2	$7\frac{5}{8}$	8	$11\frac{1}{8}$	2	$11\frac{5}{8}$	9	$11\frac{3}{4}$	3	$3\frac{5}{8}$	11	$0\frac{3}{8}$
2	$3\frac{3}{4}$	7	11	2	$7\frac{3}{4}$	8	$11\frac{1}{2}$	2	$11\frac{3}{4}$	10	$0\frac{1}{8}$	3	$3\frac{3}{4}$	11	$0\frac{3}{4}$
2	$3\frac{7}{8}$	7	$11\frac{3}{8}$	2	$7\frac{7}{8}$	9	0	2	$11\frac{7}{8}$	10	$0\frac{1}{2}$	3	$3\frac{7}{8}$	11	$1\frac{1}{8}$
2	4	7	$11\frac{3}{4}$	2	8	9	$0\frac{3}{8}$	3	0	10	$0\frac{7}{8}$	3	4	11	$1\frac{1}{2}$
2	$4\frac{1}{8}$	8	$0\frac{1}{8}$	2	$8\frac{1}{8}$	9	$0\frac{3}{4}$	3	$0\frac{1}{8}$	10	$1\frac{3}{8}$	3	$4\frac{1}{8}$	11	$1\frac{7}{8}$
2	$4\frac{1}{4}$	8	$0\frac{1}{2}$	2	$8\frac{1}{4}$	9	$1\frac{1}{8}$	3	$0\frac{1}{4}$	10	$1\frac{3}{4}$	3	$4\frac{1}{4}$	11	$2\frac{1}{4}$
2	$4\frac{3}{8}$	8	1	2	$8\frac{3}{8}$	9	$1\frac{1}{2}$	3	$0\frac{3}{8}$	10	$2\frac{1}{8}$	3	$4\frac{3}{8}$	11	$2\frac{5}{8}$
2	$4\frac{1}{2}$	8	$1\frac{3}{8}$	2	$8\frac{1}{2}$	9	$1\frac{7}{8}$	3	$0\frac{1}{2}$	10	$2\frac{1}{2}$	3	$4\frac{1}{2}$	11	3
2	$4\frac{5}{8}$	8	$1\frac{3}{4}$	2	$8\frac{5}{8}$	9	$2\frac{3}{8}$	3	$0\frac{5}{8}$	10	$2\frac{7}{8}$	3	$4\frac{5}{8}$	11	$3\frac{1}{8}$
2	$4\frac{3}{4}$	8	$2\frac{1}{8}$	2	$8\frac{3}{4}$	9	$2\frac{3}{4}$	3	$0\frac{3}{4}$	10	$3\frac{1}{4}$	3	$4\frac{3}{4}$	11	$3\frac{7}{8}$
2	$4\frac{7}{8}$	8	$2\frac{1}{4}$	2	$8\frac{7}{8}$	9	$3\frac{1}{8}$	3	$0\frac{7}{8}$	10	$3\frac{5}{8}$	3	$4\frac{7}{8}$	11	$4\frac{1}{4}$

For Angle Iron measuring 1¼ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
3	5	11	4 5/8	3	9	12	5 1/4	4	1	13	5 3/4	4	5	14	6 3/8
3	5 1/8	11	5	3	9 1/8	12	5 5/8	4	1 1/8	13	6 1/8	4	5 1/8	14	6 3/4
3	5 1/4	11	5 3/8	3	9 1/4	12	6	4	1 1/4	13	6 1/2	4	5 1/4	14	7 1/8
3	5 3/8	11	5 3/4	3	9 3/8	12	6 3/8	4	1 3/8	13	7	4	5 3/8	14	7 1/2
3	5 1/2	11	6 1/4	3	9 1/2	12	6 3/4	4	1 1/2	13	7 3/8	4	5 1/2	14	7 7/8
3	5 5/8	11	6 5/8	3	9 5/8	12	7 1/8	4	1 5/8	13	7 3/4	4	5 5/8	14	8 1/4
3	5 3/4	11	7	3	9 3/4	12	7 1/2	4	1 3/4	13	8 1/8	4	5 3/4	14	8 3/4
3	5 7/8	11	7 3/8	3	9 7/8	12	7 7/8	4	1 7/8	13	8 1/2	4	5 7/8	14	9 1/8
3	6	11	7 3/4	3	10	12	8 3/8	4	2	13	8 7/8	4	6	14	9 1/2
3	6 1/8	11	8 1/8	3	10 1/8	12	8 3/4	4	2 1/8	13	9 1/4	4	6 1/8	14	9 7/8
3	6 1/4	11	8 1/2	3	10 1/4	12	9 1/8	4	2 1/4	13	9 5/8	4	6 1/4	14	10 1/4
3	6 3/8	11	8 7/8	3	10 3/8	12	9 1/2	4	2 3/8	13	10 1/8	4	6 3/8	14	10 5/8
3	6 1/2	11	9 3/8	3	10 1/2	12	9 7/8	4	2 1/2	13	10 1/2	4	6 1/2	14	11
3	6 5/8	11	9 3/4	3	10 5/8	12	10 3/8	4	2 5/8	13	10 7/8	4	6 5/8	14	11 1/2
3	6 3/4	11	10 1/8	3	10 3/4	12	10 3/4	4	2 3/4	13	11 1/4	4	6 3/4	14	11 7/8
3	6 7/8	11	10 1/2	3	10 7/8	12	11 1/8	4	2 7/8	13	11 5/8	4	6 7/8	15	0 1/4
3	7	11	10 7/8	3	11	12	11 1/2	4	3	14	0	4	7	15	0 5/8
3	7 1/8	11	11 1/4	3	11 1/8	12	11 7/8	4	3 1/8	14	0 3/8	4	7 1/8	15	1
3	7 1/4	11	11 5/8	3	11 1/4	13	0 1/4	4	3 1/4	14	0 7/8	4	7 1/4	15	1 3/8
3	7 3/8	12	0 1/8	3	11 3/8	13	0 5/8	4	3 3/8	14	1 1/4	4	7 3/8	15	1 7/8
3	7 1/2	12	0 1/2	3	11 1/2	13	1	4	3 1/2	14	1 5/8	4	7 1/2	15	2 1/4
3	7 5/8	12	0 7/8	3	11 5/8	13	1 1/2	4	3 5/8	14	2	4	7 5/8	15	2 5/8
3	7 3/4	12	1 1/4	3	11 3/4	13	1 7/8	4	3 3/4	14	2 3/8	4	7 3/4	15	3
3	7 7/8	12	1 5/8	3	11 7/8	13	2 1/4	4	3 7/8	14	2 3/4	4	7 7/8	15	3 3/8
3	8	12	2	4	0	13	2 5/8	4	4	14	3 1/8	4	8	15	3 3/4
3	8 1/8	12	2 3/8	4	0 1/8	13	3	4	4 1/8	14	3 1/2	4	8 1/8	15	4 1/8
3	8 1/4	12	2 7/8	4	0 1/4	13	3 3/8	4	4 1/4	14	4	4	8 1/4	15	4 1/2
3	8 3/8	12	3 1/4	4	0 3/8	13	3 3/4	4	4 3/8	14	4 3/8	4	8 3/8	15	4 7/8
3	8 1/2	12	3 5/8	4	0 1/2	13	4 1/4	4	4 1/2	14	4 3/4	4	8 1/2	15	5 3/8
3	8 5/8	12	4	4	0 5/8	13	4 5/8	4	4 5/8	14	5 1/8	4	8 5/8	15	5 3/4
3	8 3/4	12	4 3/8	4	0 3/4	13	5	4	4 3/4	14	5 1/2	4	8 3/4	15	6 1/8
3	8 7/8	12	4 3/4	4	0 7/8	13	5 3/8	4	4 7/8	14	5 7/8	4	8 7/8	15	6 1/2

For Angle Iron measuring 1¼ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
4	9	15	6 7/8	5	1	16	7 1/2	5	5	17	8	5	9	18	8 5/8
4	9 1/8	15	7 1/4	5	1 1/8	16	7 5/8	5	5 1/8	17	8 3/8	5	9 1/8	18	9
4	9 1/4	15	7 3/4	5	1 1/4	16	8 1/4	5	5 1/4	17	8 7/8	5	9 1/4	18	9 3/8
4	9 3/8	15	8 1/8	5	1 3/8	16	8 5/8	5	5 3/8	17	9 1/4	5	9 3/8	18	9 3/4
4	9 1/2	15	8 1/2	5	1 1/2	16	9	5	5 1/2	17	9 5/8	5	9 1/2	18	10 1/8
4	9 5/8	15	8 7/8	5	1 5/8	16	9 3/8	5	5 5/8	17	10	5	9 5/8	18	10 1/2
4	9 3/4	15	9 1/4	5	1 3/4	16	9 7/8	5	5 3/4	17	10 3/8	5	9 3/4	18	11
4	9 7/8	15	9 5/8	5	1 7/8	16	10 1/4	5	5 7/8	17	10 3/4	5	9 7/8	18	11 3/8
4	10	15	10	5	2	16	10 5/8	5	6	17	11 1/8	5	10	18	11 3/4
4	10 1/8	15	10 3/8	5	2 1/8	16	11	5	6 1/8	17	11 1/2	5	10 1/8	19	0 1/8
4	10 1/4	15	10 7/8	5	2 1/4	16	11 3/8	5	6 1/4	18	0	5	10 1/4	19	0 1/2
4	10 3/8	15	11 1/4	5	2 3/8	16	11 3/4	5	6 3/8	18	0 3/8	5	10 3/8	19	0 7/8
4	10 1/2	15	11 5/8	5	2 1/2	17	0 1/8	5	6 1/2	18	0 3/4	5	10 1/2	19	1 3/8
4	10 5/8	16	0	5	2 5/8	17	0 5/8	5	6 5/8	18	1 1/8	5	10 5/8	19	1 3/4
4	10 3/4	16	0 3/8	5	2 3/4	17	1	5	6 3/4	18	1 1/2	5	10 3/4	19	2 1/8
4	10 7/8	16	0 3/4	5	2 7/8	17	1 3/8	5	6 7/8	18	1 7/8	5	10 7/8	19	2 1/2
4	11	16	1 1/8	5	3	17	1 3/4	5	7	18	2 3/8	5	11	19	2 7/8
4	11 1/8	16	1 5/8	5	3 1/8	17	2 1/8	5	7 1/8	18	2 3/4	5	11 1/8	19	3 1/4
4	11 1/4	16	2	5	3 1/4	17	2 1/2	5	7 1/4	18	3 1/8	5	11 1/4	19	3 5/8
4	11 3/8	16	2 3/8	5	3 3/8	17	2 7/8	5	7 3/8	18	3 1/2	5	11 3/8	19	4
4	11 1/2	16	2 3/4	5	3 1/2	17	3 3/8	5	7 1/2	18	3 7/8	5	11 1/2	19	4 1/2
4	11 5/8	16	3 1/8	5	3 5/8	17	3 3/4	5	7 5/8	18	4 1/4	5	11 5/8	19	4 7/8
4	11 3/4	16	3 1/2	5	3 3/4	17	4 1/8	5	7 3/4	18	4 5/8	5	11 3/4	19	5 1/4
4	11 7/8	16	3 7/8	5	3 7/8	17	4 1/2	5	7 7/8	18	5	5	11 7/8	19	5 5/8
5	0	16	4 3/8	5	4	17	4 7/8	5	8	18	5 1/2	6	0	19	6
5	0 1/8	16	4 3/4	5	4 1/8	17	5 1/4	5	8 1/8	18	5 7/8	6	0 1/8	19	6 3/8
5	0 1/4	16	5 1/8	5	4 1/4	17	5 5/8	5	8 1/4	18	6 1/4	6	0 1/4	19	6 7/8
5	0 3/8	16	5 1/2	5	4 3/8	17	6	5	8 3/8	18	6 5/8	6	0 3/8	19	7 1/4
5	0 1/2	16	5 7/8	5	4 1/2	17	6 1/2	5	8 1/2	18	7	6	0 1/2	19	7 5/8
5	0 5/8	16	6 1/4	5	4 5/8	17	6 7/8	5	8 5/8	18	7 3/8	6	0 5/8	19	8
5	0 3/4	16	6 5/8	5	4 3/4	17	7 1/4	5	8 3/4	18	7 7/8	6	0 3/4	19	8 3/8
5	0 7/8	16	7	5	4 7/8	17	7 5/8	5	8 7/8	18	8 1/4	6	0 7/8	19	8 3/4

For Angle Iron measuring 1¼ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
6	1	19	9⅛	6	5	20	9¾	6	9	21	10⅜	7	1	22	10⅞
6	1⅛	19	9⅜	6	5⅛	20	10⅛	6	9⅛	21	10¾	7	1⅛	22	11¼
6	1¼	19	10	6	5¼	20	10½	6	9¼	21	11⅛	7	1¼	22	11⅝
6	1⅜	19	10⅜	6	5⅜	20	10⅞	6	9⅜	21	11½	7	1⅜	23	0
6	1½	19	10¾	6	5½	20	11⅜	6	9½	21	11⅞	7	1½	23	0½
6	1⅝	19	11⅛	6	5⅝	20	11¾	6	9⅝	22	0¼	7	1⅝	23	0⅞
6	1¾	19	11½	6	5¾	21	0⅛	6	9¾	22	0⅝	7	1¾	23	1¼
6	1⅞	19	11⅞	6	5⅞	21	0½	6	9⅞	22	1	7	1⅞	23	1⅝
6	2	20	0⅜	6	6	21	0⅞	6	10	22	1½	7	2	23	2
6	2⅛	20	0¾	6	6⅛	21	1¼	6	10⅛	22	1⅞	7	2⅛	23	2⅜
6	2¼	20	1⅛	6	6¼	21	1⅝	6	10¼	22	2¼	7	2¼	23	2¾
6	2⅜	20	1½	6	6⅜	21	2	6	10⅜	22	2⅝	7	2⅜	23	3¼
6	2½	20	1⅞	6	6½	21	2½	6	10½	22	3	7	2½	23	3⅝
6	2⅝	20	2¼	6	6⅝	21	2⅞	6	10⅝	22	3⅜	7	2⅝	23	4
6	2¾	20	2⅝	6	6¾	21	3¼	6	10¾	22	3⅞	7	2¾	23	4⅜
6	2⅞	20	3	6	6⅞	21	3⅝	6	10⅞	22	4¼	7	2⅞	23	4¾
6	3	20	3½	6	7	21	4	6	11	22	4⅝	7	3	23	5⅛
6	3⅛	20	3⅞	6	7⅛	21	4⅜	6	11⅛	22	5	7	3⅛	23	5½
6	3¼	20	4¼	6	7¼	21	4¾	6	11¼	22	5⅜	7	3¼	23	6
6	3⅜	20	4⅝	6	7⅜	21	5⅛	6	11⅜	22	5¾	7	3⅜	23	6⅜
6	3½	20	5	6	7½	21	5½	6	11½	22	6⅛	7	3½	23	6¾
6	3⅝	20	5⅜	6	7⅝	21	6	6	11⅝	22	6½	7	3⅝	23	7⅛
6	3¾	20	5⅞	6	7¾	21	6⅜	6	11¾	22	7	7	3¾	23	7½
6	3⅞	20	6¼	6	7⅞	21	6¾	6	11⅞	22	7⅜	7	3⅞	23	7⅞
6	4	20	6⅝	6	8	21	7⅛	7	0	22	7¾	7	4	23	8¼
6	4⅛	20	7	6	8⅛	21	7⅝	7	0⅛	22	8⅛	7	4⅛	23	8¾
6	4¼	20	7⅜	6	8¼	21	8	7	0¼	22	8½	7	4¼	23	9⅛
6	4⅜	20	7¾	6	8⅜	21	8⅜	7	0⅜	22	8⅞	7	4⅜	23	9½
6	4½	20	8⅛	6	8½	21	8¾	7	0½	22	9¼	7	4½	23	9⅞
6	4⅝	20	8½	6	8⅝	21	9⅛	7	0⅝	22	9¾	7	4⅝	23	10¼
6	4¾	20	9	6	8¾	21	9½	7	0¾	22	10⅛	7	4¾	23	10⅝
6	4⅞	20	9⅜	6	8⅞	21	9⅞	7	0⅞	22	10½	7	4⅞	23	11

For ANGLE IRON measuring 1¼ Inch thick, diagonally across the root.

FLANGE OUTSIDE.

INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		INSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
7	5	23	11½	7	9	25	0	8	1	26	0⅛	8	5	27	1⅛
7	5⅛	23	11⅞	7	9⅛	25	0⅜	8	1⅛	26	1	8	5⅛	27	1½
7	5¼	24	0¼	7	9¼	25	0⅞	8	1¼	26	1⅜	8	5¼	27	1⅞
7	5⅜	24	0⅛	7	9⅜	25	1¼	8	1⅜	26	1¾	8	5⅜	27	2⅜
7	5½	24	1	7	9½	25	1⅛	8	1½	26	2⅛	8	5½	27	2¾
7	5⅝	24	1⅜	7	9⅝	25	2	8	1⅝	26	2½	8	5⅝	27	3⅛
7	5¾	24	1¾	7	9¾	25	2⅜	8	1¾	26	2⅞	8	5¾	27	3½
7	5⅞	24	2¼	7	9⅞	25	2¾	8	1⅞	26	3⅜	8	5⅞	27	3⅞
7	6	24	2⅝	7	10	25	3⅛	8	2	26	3¾	8	6	27	4¼
7	6⅛	24	3	7	10⅛	25	3½	8	2⅛	26	4⅛	8	6⅛	27	4⅝
7	6¼	24	3⅜	7	10¼	25	3⅞	8	2¼	26	4½	8	6¼	27	5
7	6⅜	24	3¾	7	10⅜	25	4⅜	8	2⅜	26	4⅞	8	6⅜	27	5½
7	6½	24	4⅛	7	10½	25	4¾	8	2½	26	5¼	8	6½	27	5⅞
7	6⅝	24	4½	7	10⅝	25	5⅛	8	2⅝	26	5⅝	8	6⅝	27	6¼
7	6¾	24	4⅞	7	10¾	25	5½	8	2¾	26	6	8	6¾	27	6⅝
7	6⅞	24	5⅜	7	10⅞	25	5⅞	8	2⅞	26	6½	8	6⅞	27	7
7	7	24	5¾	7	11	25	6¼	8	3	26	6⅞	8	7	27	7⅜
7	7⅛	24	6⅛	7	11⅛	25	6⅝	8	3⅛	26	7¼	8	7⅛	27	7⅞
7	7¼	24	6½	7	11¼	25	7	8	3¼	26	7⅝	8	7¼	27	8¼
7	7⅜	24	6⅞	7	11⅜	25	7⅛	8	3⅜	26	8	8	7⅜	27	8⅝
7	7½	24	7¼	7	11½	25	7⅞	8	3½	26	8⅜	8	7½	27	9
7	7⅝	24	7⅝	7	11⅝	25	8¼	8	3⅝	26	8⅞	8	7⅝	27	9⅜
7	7¾	24	8	7	11¾	25	8⅝	8	3¾	26	9¼	8	7¾	27	9¾
7	7⅞	24	8½	7	11⅞	25	9	8	3⅞	26	9⅝	8	7⅞	27	10⅛
7	8	24	8⅞	8	0	25	9½	8	4	26	10	8	8	27	10⅝
7	8⅛	24	9¼	8	0⅛	25	9⅞	8	4⅛	26	10⅜	8	8⅛	27	11
7	8¼	24	9⅝	8	0¼	25	10¼	8	4¼	26	10¾	8	8¼	27	11⅜
7	8⅜	24	10	8	0⅜	25	10⅝	8	4⅜	26	11⅛	8	8⅜	27	11¾
7	8½	24	10½	8	0½	25	11	8	4½	26	11½	8	8½	28	0⅛
7	8⅝	24	10⅞	8	0⅝	25	11⅜	8	4⅝	27	0	8	8⅝	28	0½
7	8¾	24	11¼	8	0¾	25	11¾	8	4¾	27	0⅜	8	8¾	28	0⅞
7	8⅞	24	11⅝	8	0⅞	26	0⅛	8	4⅞	27	0¾	8	8⅞	28	1⅜

THE BOILER-MAKERS'

AND

IRON SHIP-BUILDERS' COMPANION.

SECTION II.

Tables for the formation of Circular and Oval Angled Iron Rings,

FLANGE INSIDE.

FIG. 1.

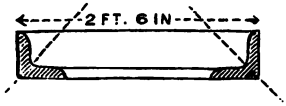


Figure 1 represents an angled iron ring, whose outside diameter is supposed to be 2 feet 6 inches, made of angled iron, measuring $\frac{3}{4}$ of an inch thick diagonally across the root of the bar. In table 14, page 84, in the column of lengths, opposite the given diameter, is 7ft. $5\frac{1}{2}$in, the length required for a ring of such dimensions.

EXAMPLES.—What length of angled iron, measuring 1 inch thick, diagonally across the root of the bar, is required to make a ring, the outside diameter being 6 feet 9 inches? In table 16, page 99, opposite 6 feet 9 inches, is 20 feet $8\frac{1}{8}$ inches, the length required.

What length of angled iron, which measures $\frac{1}{2}$ an inch thick, diagonally across the root of the bar, will make a ring, the outside diameter being 2 feet 3 inches? In table 12, page 72, opposite the given diameter, is 6 feet $9\frac{3}{8}$ inches, the length required.

To make an angled iron ring, in two equal parts, jump jointed, measuring $\frac{3}{8}$ of an inch thick diagonally across the root of the bar,

whose outside diameter is 5 feet 4 inches. To find the length required for one of the parts: in table 11, page 68, opposite the given diameter, is 16 feet 6⅝ inches, which, if divided by 2, gives 8 feet 3$\frac{5}{16}$ inches, the length required for one half the ring.

Fig. 2.

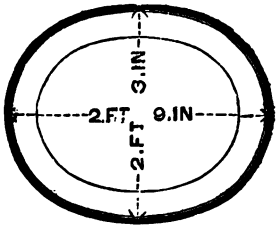


Figure 2 represents an oval ring, whose axis are 2 feet 9 inches, and 2 feet 3 inches. To find the length for any size of such ring, reduce the two axis to a diameter, by adding them together, and divide their product by 2.

Example—What length of angled iron is required to form an oval ring whose axis are 2 feet 9 inches and 2 feet 3 inches, to be made of angled iron, measuring ¾ of an inch thick diagonally across the root of the bar—

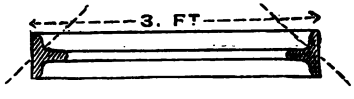
2 feet 9 inches.
2 ,, 3 ,,

2 | 5 ,, 0 ,,

2 ,, 6 ,, the diameter required.

In table 14, page 84, opposite 2 feet 6 inches, outside diameter, is 7 feet 5½ inches, the length required.

Fig. 3.



To make a ring as figure 3, whose outside diameter equals 3 feet to be formed of T iron, measuring ¾ of an inch thick, diagonally across the root of the bar, what length is required for the ring? In table 14, page 84, opposite the given diameter, is 9 ft. 0⅜ in. the length required.

TABLE X.

For Angle Iron measuring $\frac{1}{4}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN
0	6	1	5 1/4	0	10	2	5 7/8	1	2	3	6 3/8	1	6	4	7
0	6 1/8	1	5 5/8	0	10 1/8	2	6 1/4	1	2 1/8	3	6 3/4	1	6 1/8	4	7 3/8
0	6 1/4	1	6	0	10 1/4	2	6 5/8	1	2 1/4	3	7 1/8	1	6 1/4	4	7 3/4
0	6 3/8	1	6 1/2	0	10 3/8	2	7	1	2 3/8	3	7 5/8	1	6 3/8	4	8 1/8
0	6 1/2	1	6 7/8	0	10 1/2	2	7 3/8	1	2 1/2	3	8	1	6 1/2	4	8 1/2
0	6 5/8	1	7 1/4	0	10 5/8	2	7 3/4	1	2 5/8	3	8 3/8	1	6 5/8	4	8 7/8
0	6 3/4	1	7 5/8	0	10 3/4	2	8 1/4	1	2 3/4	3	8 3/4	1	6 3/4	4	9 1/4
0	6 7/8	1	8	0	10 7/8	2	8 5/8	1	2 7/8	3	9 1/8	1	6 7/8	4	9 5/8
0	7	1	8 3/8	0	11	2	9	1	3	3	9 1/2	1	7	4	10 1/8
0	7 1/8	1	8 3/4	0	11 1/8	2	9 3/8	1	3 1/8	3	9 7/8	1	7 1/8	4	10 1/2
0	7 1/4	1	9 1/8	0	11 1/4	2	9 3/4	1	3 1/4	3	10 3/8	1	7 1/4	4	10 7/8
0	7 3/8	1	9 1/2	0	11 3/8	2	10 1/8	1	3 3/8	3	10 3/4	1	7 3/8	4	11 1/4
0	7 1/2	1	10	0	11 1/2	2	10 1/2	1	3 1/2	3	11 1/8	1	7 1/2	4	11 5/8
0	7 5/8	1	10 3/8	0	11 5/8	2	10 7/8	1	3 5/8	3	11 1/2	1	7 5/8	5	0
0	7 3/4	1	10 3/4	0	11 3/4	2	11 3/8	1	3 3/4	3	11 7/8	1	7 3/4	5	0 3/8
0	7 7/8	1	11 1/8	0	11 7/8	2	11 3/4	1	3 7/8	4	0 1/4	1	7 7/8	5	0 7/8
0	8	1	11 1/2	1	0	3	0 1/8	1	4	4	0 5/8	1	8	5	1 1/4
0	8 1/8	1	11 7/8	1	0 1/8	3	0 1/2	1	4 1/8	4	1	1	8 1/8	5	1 5/8
0	8 1/4	2	0 3/8	1	0 1/4	3	0 7/8	1	4 1/4	4	1 3/8	1	8 1/4	5	2
0	8 3/8	2	0 3/4	1	0 3/8	3	1 1/4	1	4 3/8	4	1 7/8	1	8 3/8	5	2 3/8
0	8 1/2	2	1 1/8	1	0 1/2	3	1 5/8	1	4 1/2	4	2 1/4	1	8 1/2	5	2 3/4
0	8 5/8	2	1 1/2	1	0 5/8	3	2	1	4 5/8	4	2 5/8	1	8 5/8	5	3 1/8
0	8 3/4	2	1 7/8	1	0 3/4	3	2 1/2	1	4 3/4	4	3	1	8 3/4	5	3 5/8
0	8 7/8	2	2 3/8	1	0 7/8	3	2 7/8	1	4 7/8	4	3 3/8	1	8 7/8	5	4
0	9	2	2 3/4	1	1	3	3 1/4	1	5	4	3 3/4	1	9	5	4 3/8
0	9 1/8	2	3 1/8	1	1 1/8	3	3 5/8	1	5 1/8	4	4 1/8	1	9 1/8	5	4 3/4
0	9 1/4	2	3 1/2	1	1 1/4	3	4	1	5 1/4	4	4 1/2	1	9 1/4	5	5 1/8
0	9 3/8	2	3 7/8	1	1 3/8	3	4 3/8	1	5 3/8	4	5	1	9 3/8	5	5 1/2
0	9 1/2	2	4 1/4	1	1 1/2	3	4 7/8	1	5 1/2	4	5 3/8	1	9 1/2	5	5 7/8
0	9 5/8	2	4 5/8	1	1 5/8	3	5 1/4	1	5 5/8	4	5 3/4	1	9 5/8	5	6 3/8
0	9 3/4	2	5	1	1 3/4	3	5 5/8	1	5 3/4	4	6 1/8	1	9 3/4	5	6 3/4
0	9 7/8	2	5 1/2	1	1 7/8	3	6	1	5 7/8	4	6 1/2	1	9 7/8	5	7 1/8

For Angle Iron measuring $\frac{1}{4}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN
1	10	5	7 1/4	2	2	6	8 1/8	2	6	7	8 5/8	2	10	8	9 1/4
1	10 1/8	5	8	2	2 1/8	6	8 1/2	2	6 1/8	7	9	2	10 1/8	8	9 5/8
1	10 1/4	5	8 3/8	2	2 1/4	6	8 7/8	2	6 1/4	7	9 3/8	2	10 1/4	8	10
1	10 3/8	5	8 3/4	2	2 3/8	6	9 1/4	2	6 3/8	7	9 3/4	2	10 3/8	8	10 3/8
1	10 1/2	5	9 1/8	2	2 1/2	6	9 5/8	2	6 1/2	7	10 1/4	2	10 1/2	8	10 3/4
1	10 5/8	5	9 1/2	2	2 5/8	6	10	2	6 5/8	7	10 5/8	2	10 5/8	8	11 1/8
1	10 3/4	5	9 7/8	2	2 3/4	6	10 1/2	2	6 3/4	7	11	2	10 3/4	8	11 1/2
1	10 7/8	5	10 1/4	2	2 7/8	6	10 7/8	2	6 7/8	7	11 3/8	2	10 7/8	9	0
1	11	5	10 5/8	2	3	6	11 1/4	2	7	7	11 3/4	2	11	9	0 3/8
1	11 1/8	5	11	2	3 1/8	6	11 5/8	2	7 1/8	8	0 1/8	2	11 1/8	9	0 3/4
1	11 1/4	5	11 1/2	2	3 1/4	7	0	2	7 1/4	8	0 1/2	2	11 1/4	9	1 1/8
1	11 3/8	5	11 7/8	2	3 3/8	7	0 3/8	2	7 3/8	8	1	2	11 3/8	9	1 1/2
1	11 1/2	6	0 1/4	2	3 1/2	7	0 3/4	2	7 1/2	8	1 3/8	2	11 1/2	9	1 7/8
1	11 5/8	6	0 5/8	2	3 5/8	7	1 1/8	2	7 5/8	8	1 3/4	2	11 5/8	9	2 3/8
1	11 3/4	6	1	2	3 3/4	7	1 1/2	2	7 3/4	8	2 1/8	2	11 3/4	9	2 3/4
1	11 7/8	6	1 3/8	2	3 7/8	7	2	2	7 7/8	8	2 1/2	2	11 7/8	9	3 1/8
2	0	6	1 3/4	2	4	7	2 3/8	2	8	8	2 7/8	3	0	9	3 1/2
2	0 1/8	6	2 1/4	2	4 1/8	7	2 3/4	2	8 1/8	8	3 3/8	3	0 1/8	9	3 7/8
2	0 1/4	6	2 5/8	2	4 1/4	7	3 1/8	2	8 1/4	8	3 3/4	3	0 1/4	9	4 1/4
2	0 3/8	6	3	2	4 3/8	7	3 1/2	2	8 3/8	8	4 1/8	3	0 3/8	9	4 5/8
2	0 1/2	6	3 3/8	2	4 1/2	7	3 7/8	2	8 1/2	8	4 1/2	3	0 1/2	9	5
2	0 5/8	6	3 3/4	2	4 5/8	7	4 3/8	2	8 5/8	8	4 7/8	3	0 5/8	9	5 1/2
2	0 3/4	6	4 1/8	2	4 3/4	7	4 3/4	2	8 3/4	8	5 1/4	3	0 3/4	9	5 7/8
2	0 7/8	6	4 1/2	2	4 7/8	7	5 1/8	2	8 7/8	8	5 5/8	3	0 7/8	9	6 1/4
2	1	6	4 7/8	2	5	7	5 1/2	2	9	8	6	3	1	9	6 5/8
2	1 1/8	6	5 3/8	2	5 1/8	7	5 7/8	2	9 1/8	8	6 1/2	3	1 1/8	9	7
2	1 1/4	6	5 3/4	2	5 1/4	7	6 1/4	2	9 1/4	8	6 7/8	3	1 1/4	9	7 3/8
2	1 3/8	6	6 1/8	2	5 3/8	7	6 5/8	2	9 3/8	8	7 1/4	3	1 3/8	9	7 7/8
2	1 1/8	6	6 1/2	2	5 1/2	7	7	2	9 1/2	8	7 5/8	3	1 1/2	9	8 1/4
2	1 5/8	6	6 7/8	2	5 5/8	7	7 1/2	2	9 5/8	8	8	3	1 5/8	9	8 5/8
2	1 3/4	6	7 1/4	2	5 3/4	7	7 7/8	2	9 3/4	8	8 3/8	3	1 3/4	9	9
2	1 7/8	6	7 5/8	2	5 7/8	7	8 1/4	2	9 7/8	8	8 7/8	3	1 7/8	9	9 3/8

For Angle Iron measuring $\frac{1}{4}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN
8	2	9	$9\frac{1}{4}$	8	6	10	$10\frac{3}{8}$	8	10	11	$10\frac{7}{8}$	4	2	12	$11\frac{1}{4}$
8	$2\frac{1}{8}$	9	$10\frac{1}{8}$	8	$6\frac{1}{8}$	10	$10\frac{3}{4}$	8	$10\frac{1}{8}$	11	$11\frac{1}{4}$	4	$2\frac{1}{8}$	12	$11\frac{7}{8}$
8	$2\frac{1}{4}$	9	$10\frac{1}{2}$	8	$6\frac{1}{4}$	10	$11\frac{1}{8}$	8	$10\frac{1}{4}$	11	$11\frac{5}{8}$	4	$2\frac{1}{4}$	13	$0\frac{1}{4}$
8	$2\frac{3}{8}$	9	$10\frac{7}{8}$	8	$6\frac{3}{8}$	10	$11\frac{1}{2}$	8	$10\frac{3}{8}$	12	$0\frac{1}{8}$	4	$2\frac{3}{8}$	13	$0\frac{5}{8}$
8	$2\frac{1}{2}$	9	$11\frac{3}{8}$	8	$6\frac{1}{2}$	10	$11\frac{7}{8}$	8	$10\frac{1}{2}$	12	$0\frac{1}{2}$	4	$2\frac{1}{2}$	13	1
8	$2\frac{5}{8}$	9	$11\frac{3}{4}$	8	$6\frac{5}{8}$	11	$0\frac{3}{8}$	8	$10\frac{5}{8}$	12	$0\frac{7}{8}$	4	$2\frac{5}{8}$	13	$1\frac{1}{8}$
8	$2\frac{3}{4}$	10	$0\frac{1}{8}$	8	$6\frac{3}{4}$	11	$0\frac{3}{4}$	8	$10\frac{3}{4}$	12	$1\frac{1}{4}$	4	$2\frac{3}{4}$	13	$1\frac{7}{8}$
8	$2\frac{7}{8}$	10	$0\frac{1}{2}$	8	$6\frac{7}{8}$	11	$1\frac{1}{8}$	8	$10\frac{7}{8}$	12	$1\frac{5}{8}$	4	$2\frac{7}{8}$	13	$2\frac{1}{4}$
8	3	10	$0\frac{7}{8}$	8	7	11	$1\frac{1}{2}$	8	11	12	2	4	3	13	$2\frac{5}{8}$
8	$3\frac{1}{8}$	10	$1\frac{3}{8}$	8	$7\frac{1}{8}$	11	$1\frac{7}{8}$	8	$11\frac{1}{8}$	12	$2\frac{3}{8}$	4	$3\frac{1}{8}$	13	3
8	$3\frac{1}{4}$	10	$1\frac{3}{4}$	8	$7\frac{1}{4}$	11	$2\frac{1}{4}$	8	$11\frac{1}{4}$	12	$2\frac{7}{8}$	4	$3\frac{1}{4}$	13	$3\frac{3}{8}$
8	$3\frac{3}{8}$	10	$2\frac{1}{8}$	8	$7\frac{3}{8}$	11	$2\frac{5}{8}$	8	$11\frac{3}{8}$	12	$3\frac{1}{4}$	4	$3\frac{3}{8}$	13	$3\frac{3}{4}$
8	$3\frac{1}{2}$	10	$2\frac{1}{2}$	8	$7\frac{1}{2}$	11	3	8	$11\frac{1}{2}$	12	$3\frac{5}{8}$	4	$3\frac{1}{2}$	13	$4\frac{1}{4}$
8	$3\frac{5}{8}$	10	$2\frac{7}{8}$	8	$7\frac{5}{8}$	11	$3\frac{1}{8}$	8	$11\frac{5}{8}$	12	4	4	$3\frac{5}{8}$	13	$4\frac{5}{8}$
8	$3\frac{3}{4}$	10	$3\frac{1}{4}$	8	$7\frac{3}{4}$	11	$3\frac{7}{8}$	8	$11\frac{3}{4}$	12	$4\frac{3}{8}$	4	$3\frac{3}{4}$	13	5
8	$3\frac{7}{8}$	10	$3\frac{5}{8}$	8	$7\frac{7}{8}$	11	$4\frac{1}{4}$	8	$11\frac{7}{8}$	12	$4\frac{3}{4}$	4	$3\frac{7}{8}$	13	$5\frac{3}{8}$
8	4	10	4	8	8	11	$4\frac{5}{8}$	4	0	12	$5\frac{1}{4}$	4	4	13	$5\frac{3}{4}$
8	$4\frac{1}{8}$	10	$4\frac{1}{2}$	8	$8\frac{1}{8}$	11	5	4	$0\frac{1}{8}$	12	$5\frac{5}{8}$	4	$4\frac{1}{8}$	13	$6\frac{1}{8}$
8	$4\frac{1}{4}$	10	$4\frac{7}{8}$	8	$8\frac{1}{4}$	11	$5\frac{3}{8}$	4	$0\frac{1}{4}$	12	6	4	$4\frac{1}{4}$	13	$6\frac{1}{4}$
8	$4\frac{3}{8}$	10	$5\frac{1}{4}$	8	$8\frac{3}{8}$	11	$5\frac{3}{4}$	4	$0\frac{3}{8}$	12	$6\frac{3}{8}$	4	$4\frac{3}{8}$	13	7
8	$4\frac{1}{2}$	10	$5\frac{5}{8}$	8	$8\frac{1}{2}$	11	$6\frac{1}{4}$	4	$0\frac{1}{2}$	12	$6\frac{3}{4}$	4	$4\frac{1}{2}$	13	$7\frac{3}{8}$
8	$4\frac{5}{8}$	10	6	8	$8\frac{5}{8}$	11	$6\frac{5}{8}$	4	$0\frac{5}{8}$	12	$7\frac{1}{8}$	4	$4\frac{5}{8}$	13	$7\frac{3}{4}$
8	$4\frac{3}{4}$	10	$6\frac{3}{8}$	8	$8\frac{3}{4}$	11	7	4	$0\frac{3}{4}$	12	$7\frac{1}{2}$	4	$4\frac{3}{4}$	13	$8\frac{1}{8}$
8	$4\frac{7}{8}$	10	$6\frac{7}{8}$	8	$8\frac{7}{8}$	11	$7\frac{3}{8}$	4	$0\frac{7}{8}$	12	$7\frac{7}{8}$	4	$4\frac{7}{8}$	13	$8\frac{1}{2}$
8	5	10	$7\frac{1}{4}$	8	9	11	$7\frac{3}{4}$	4	1	12	$8\frac{3}{8}$	4	5	13	$8\frac{7}{8}$
8	$5\frac{1}{8}$	10	$7\frac{5}{8}$	8	$9\frac{1}{8}$	11	$8\frac{1}{8}$	4	$1\frac{1}{8}$	12	$8\frac{3}{4}$	4	$5\frac{1}{8}$	13	$9\frac{1}{4}$
8	$5\frac{1}{4}$	10	8	8	$9\frac{1}{4}$	11	$8\frac{1}{2}$	4	$1\frac{1}{4}$	12	$9\frac{1}{8}$	4	$5\frac{1}{4}$	13	$9\frac{5}{8}$
8	$5\frac{3}{8}$	10	$8\frac{3}{8}$	8	$9\frac{3}{8}$	11	$8\frac{7}{8}$	4	$1\frac{3}{8}$	12	$9\frac{1}{2}$	4	$5\frac{3}{8}$	13	$10\frac{1}{8}$
8	$5\frac{1}{2}$	10	$8\frac{3}{4}$	8	$9\frac{1}{2}$	11	$9\frac{3}{8}$	4	$1\frac{1}{2}$	12	$9\frac{7}{8}$	4	$5\frac{1}{2}$	13	$10\frac{1}{8}$
8	$5\frac{5}{8}$	10	$9\frac{1}{4}$	8	$9\frac{5}{8}$	11	$9\frac{3}{4}$	4	$1\frac{5}{8}$	12	$10\frac{3}{8}$	4	$5\frac{5}{8}$	13	$10\frac{7}{8}$
8	$5\frac{3}{4}$	10	$9\frac{1}{2}$	8	$9\frac{3}{4}$	11	$10\frac{1}{8}$	4	$1\frac{3}{4}$	12	$10\frac{3}{4}$	4	$5\frac{3}{4}$	13	$11\frac{1}{4}$
8	$5\frac{7}{8}$	10	$9\frac{7}{8}$	8	$9\frac{7}{8}$	11	$10\frac{1}{2}$	4	$1\frac{7}{8}$	12	$11\frac{1}{8}$	4	$5\frac{7}{8}$	13	$11\frac{5}{8}$

For ANGLE IRON measuring ¼ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN
4	6	14	0	4	10	15	0⅝	5	2	16	1⅛	5	6	17	1¼
4	6⅛	14	0⅜	4	10⅛	15	1	5	2⅛	16	1⅝	5	6⅛	17	2⅛
4	6¼	14	0⅞	4	10¼	15	1⅜	5	2¼	16	2	5	6¼	17	2⅜
4	6⅜	14	1¼	4	10⅜	15	1⅞	5	2⅜	16	2⅜	5	6⅜	17	2⅞
4	6½	14	1⅝	4	10½	15	2¼	5	2½	16	2¾	5	6½	17	3⅜
4	6⅝	14	2	4	10⅝	15	2⅝	5	2⅝	16	3⅛	5	6⅝	17	3¾
4	6¾	14	2⅜	4	10¾	15	3	5	2¾	16	3½	5	6¾	17	4⅛
4	6⅞	14	2¾	4	10⅞	15	3⅜	5	2⅞	16	3⅞	5	6⅞	17	4½
4	7	14	3⅛	4	11	15	3¾	5	3	16	4⅜	5	7	17	4⅞
4	7⅛	14	3½	4	11⅛	15	4⅛	5	3⅛	16	4¾	5	7⅛	17	5¼
4	7¼	14	4	4	11¼	15	4½	5	3¼	16	5⅛	5	7¼	17	5⅝
4	7⅜	14	4⅜	4	11⅜	15	4⅞	5	3⅜	16	5½	5	7⅜	17	6
4	7½	14	4¾	4	11½	15	5⅜	5	3½	16	5⅞	5	7½	17	6½
4	7⅝	14	5⅛	4	11⅝	15	5¾	5	3⅝	16	6¼	5	7⅝	17	6⅞
4	7¾	14	5½	4	11¾	15	6⅛	5	3¾	16	6⅝	5	7¾	17	7¼
4	7⅞	14	5⅞	4	11⅞	15	6½	5	3⅞	16	7	5	7⅞	17	7⅝
4	8	14	6⅜	5	0	15	6⅞	5	4	16	7⅓	5	8	17	8
4	8⅛	14	6¾	5	0⅛	15	7¼	5	4⅛	16	7⅞	5	8⅛	17	8⅜
4	8¼	14	7⅛	5	0¼	15	7¾	5	4¼	16	8¼	5	8¼	17	8⅞
4	8⅜	14	7⅓	5	0⅜	15	8⅛	5	4⅜	16	8⅝	5	8⅜	17	9¼
4	8½	14	7⅞	5	0½	15	8½	5	4½	16	9	5	8½	17	9⅝
4	8⅝	14	8¼	5	0⅝	15	8⅞	5	4⅝	16	9⅜	5	8⅝	17	10
4	8¾	14	8¾	5	0¾	15	9¼	5	4¾	16	9⅞	5	8¾	17	10⅜
4	8⅞	14	9⅛	5	0⅞	15	9⅝	5	4⅞	16	10¼	5	8⅞	17	10¾
4	9	14	9½	5	1	15	10	5	5	16	10⅝	5	9	17	11⅛
4	9⅛	14	9⅞	5	1⅛	15	10⅜	5	5⅛	16	11	5	9⅛	17	11½
4	9¼	14	10¼	5	1¼	15	10⅞	5	5¼	16	11⅜	5	9¼	18	0
4	9⅜	14	10⅝	5	1⅜	15	11¼	5	5⅜	16	11¾	5	9⅜	18	0⅜
4	9½	14	11	5	1½	15	11⅝	5	5½	17	0⅛	5	9½	18	0¾
4	9⅝	14	11½	5	1⅝	16	0	5	5⅝	17	0⅜	5	9⅝	18	1⅛
4	9¾	14	11⅞	5	1¾	16	0⅜	5	5¾	17	1	5	9¾	18	1½
4	9⅞	15	0¼	5	1⅞	16	0¾	5	5⅞	17	1⅜	5	9⅞	18	1⅞

For Angle Iron measuring ¼ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN
5	10	18	2⅜	6	2	19	2⅞	6	6	20	3⅛	6	10	21	4
5	10⅛	18	2¾	6	2⅛	19	3¼	6	6⅛	20	3⅞	6	10⅛	21	4⅜
5	10¼	18	3⅛	6	2¼	19	3⅝	6	6¼	20	4¼	6	10¼	21	4¾
5	10⅜	18	3½	6	2⅜	19	4	6	6⅜	20	4⅝	6	10⅜	21	5⅛
5	10½	18	3⅞	6	2½	19	4½	6	6½	20	5	6	10½	21	5½
5	10⅝	18	4¼	6	2⅝	19	4⅞	6	6⅝	20	5⅜	6	10⅝	21	6
5	10¾	18	4⅝	6	2¾	19	5¼	6	6¾	20	5⅞	6	10¾	21	6⅜
5	10⅞	18	5	6	2⅞	19	5⅝	6	6⅞	20	6¼	6	10⅞	21	6¾
5	11	18	5½	6	3	19	6	6	7	20	6⅝	6	11	21	7⅛
5	11⅛	18	5⅞	6	3⅛	19	6⅜	6	7⅛	20	7	6	11⅛	21	7⅝
5	11¼	18	6¼	6	3¼	19	6⅞	6	7¼	20	7⅜	6	11¼	21	8
5	11⅜	18	6⅝	6	3⅜	19	7¼	6	7⅜	20	7¾	6	11⅜	21	8⅜
5	11½	18	7	6	3½	19	7⅝	6	7½	20	8⅛	6	11½	21	8¾
5	11⅝	18	7⅜	6	3⅝	19	8	6	7⅝	20	8½	6	11⅝	21	9⅛
5	11¾	18	7⅞	6	3¾	19	8⅜	6	7¾	20	9	6	11¾	21	9½
5	11⅞	18	8¼	6	3⅞	19	8¾	6	7⅞	20	9⅜	6	11⅞	21	9⅞
6	0	18	8⅝	6	4	19	9⅛	6	8	20	9¾	7	0	21	10⅜
6	0⅛	18	9	6	4⅛	19	9⅝	6	8⅛	20	10⅛	7	0⅛	21	10¾
6	0¼	18	9⅜	6	4¼	19	10	6	8¼	20	10½	7	0¼	21	11⅛
6	0⅜	18	9¾	6	4⅜	19	10⅜	6	8⅜	20	10⅞	7	0⅜	21	11½
6	0½	18	10⅛	6	4½	19	10¾	6	8½	20	11⅜	7	0½	21	11⅞
6	0⅝	18	10½	6	4⅝	19	11⅛	6	8⅝	20	11¾	7	0⅝	22	0¼
6	0¾	18	11	6	4¾	19	11½	6	8¾	21	0⅛	7	0¾	22	0⅝
6	0⅞	18	11⅜	6	4⅞	19	11⅞	6	8⅞	21	0½	7	0⅞	22	1
6	1	18	11¾	6	5	20	0⅜	6	9	21	0⅞	7	1	22	1½
6	1⅛	19	0⅛	6	5⅛	20	0¾	6	9⅛	21	1¼	7	1⅛	22	1⅞
6	1¼	19	0½	6	5¼	20	1⅛	6	9¼	21	1⅝	7	1¼	22	2¼
6	1⅜	19	0⅞	6	5⅜	20	1½	6	9⅜	21	2	7	1⅜	22	2⅝
6	1½	19	1⅜	6	5½	20	1⅞	6	9½	21	2⅜	7	1½	22	3
6	1⅝	19	1¾	6	5⅝	20	2¼	6	9⅝	21	2⅞	7	1⅝	22	3⅜
6	1¾	19	2⅛	6	5¾	20	2⅝	6	9¾	21	3¼	7	1¾	22	3⅞
6	1⅞	19	2½	6	5⅞	20	3	6	9⅞	21	3⅝	7	1⅞	22	4¼

For Angle Iron measuring ¼ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN
7	2	22	4 5/8	7	6	23	5 1/8	7	10	24	5 3/4	8	2	25	6 1/4
7	2 1/8	22	5	7	6 1/8	23	5 1/4	7	10 1/8	24	6 1/8	8	2 1/8	25	6 5/8
7	2 1/4	22	5 3/8	7	6 1/4	23	6	7	10 1/4	24	6 1/4	8	2 1/4	25	7
7	2 3/8	22	5 3/4	7	6 3/8	23	6 3/8	7	10 3/8	24	6 7/8	8	2 3/8	25	7 1/8
7	2 1/2	22	6 1/8	7	6 1/2	23	6 3/4	7	10 1/2	24	7 1/4	8	2 1/2	25	7 7/8
7	2 5/8	22	6 1/2	7	6 5/8	23	7 1/8	7	10 5/8	24	7 5/8	8	2 5/8	25	8 1/4
7	2 3/4	22	7	7	6 3/4	23	7 1/4	7	10 3/4	24	8	8	2 3/4	25	8 5/8
7	2 7/8	22	7 3/8	7	6 7/8	23	7 7/8	7	10 7/8	24	8 1/2	8	2 7/8	25	9
7	3	22	7 3/4	7	7	23	8 1/4	7	11	24	8 7/8	8	3	25	9 1/2
7	3 1/8	22	8 1/8	7	7 1/8	23	8 3/4	7	11 1/8	24	9 1/4	8	3 1/8	25	9 7/8
7	3 1/4	22	8 1/2	7	7 1/4	23	9 1/8	7	11 1/4	24	9 5/8	8	3 1/4	25	10 1/4
7	3 3/8	22	8 7/8	7	7 3/8	23	9 1/2	7	11 3/8	24	10	8	3 3/8	25	10 5/8
7	3 1/2	22	9 1/4	7	7 1/2	23	9 7/8	7	11 1/2	24	10 1/2	8	3 1/2	25	11
7	3 5/8	22	9 3/4	7	7 5/8	23	10 1/4	7	11 5/8	24	10 7/8	8	3 5/8	25	11 3/8
7	3 3/4	22	10 1/8	7	7 3/4	23	10 5/8	7	11 3/4	24	11 1/4	8	3 3/4	25	11 3/4
7	3 7/8	22	10 1/2	7	7 7/8	23	11	7	11 7/8	24	11 5/8	8	3 7/8	26	0 1/8
7	4	22	10 7/8	7	8	23	11 1/2	8	0	25	0	8	4	26	0 1/8
7	4 1/8	22	11 1/4	7	8 1/8	23	11 7/8	8	0 1/8	25	0 3/8	8	4 1/8	26	1
7	4 1/4	22	11 5/8	7	8 1/4	24	0 1/4	8	0 1/4	25	0 3/4	8	4 1/4	26	1 3/8
7	4 3/8	23	0	7	8 3/8	24	0 5/8	8	0 3/8	25	1 1/4	8	4 3/8	26	1 3/4
7	4 1/2	23	0 1/2	7	8 1/2	24	1	8	0 1/2	25	1 5/8	8	4 1/2	26	2 1/8
7	4 5/8	23	0 7/8	7	8 5/8	24	1 3/8	8	0 5/8	25	2	8	4 5/8	26	2 1/2
7	4 3/4	23	1 1/4	7	8 3/4	24	1 3/4	8	0 3/4	25	2 3/8	8	4 3/4	26	2 7/8
7	4 7/8	23	1 5/8	7	8 7/8	24	2 1/4	8	0 7/8	25	2 3/4	8	4 7/8	26	3 3/8
7	5	23	2	7	9	24	2 5/8	8	1	25	3 1/8	8	5	26	3 3/4
7	5 1/8	23	2 3/8	7	9 1/8	24	3	8	1 1/8	25	3 1/2	8	5 1/8	26	4 1/8
7	5 1/4	23	2 3/4	7	9 1/4	24	3 3/8	8	1 1/4	25	3 7/8	8	5 1/4	26	4 1/2
7	5 3/8	23	3 1/4	7	9 3/8	24	3 3/4	8	1 3/8	25	4 3/8	8	5 3/8	26	4 7/8
7	5 1/2	23	3 5/8	7	9 1/2	24	4 1/8	8	1 1/2	25	4 3/4	8	5 1/2	26	5 1/4
7	5 5/8	23	4	7	9 5/8	24	4 1/2	8	1 5/8	25	5 1/8	8	5 5/8	26	5 5/8
7	5 3/4	23	4 3/8	7	9 3/4	24	4 7/8	8	1 3/4	25	5 1/2	8	5 3/4	26	6
7	5 7/8	23	4 3/4	7	9 7/8	24	5 3/8	8	1 7/8	25	5 7/8	8	5 7/8	26	6 1/2

TABLE XI.

For Angle Iron measuring $\frac{3}{8}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
0	6	1	4 1/2	0	10	2	5	1	2	3	5 5/8	1	6	4	6 1/8
0	6 1/8	1	4 7/8	0	10 1/8	2	5 1/2	1	2 1/8	3	6	1	6 1/8	4	6 1/2
0	6 1/4	1	5 1/4	0	10 1/4	2	5 7/8	1	2 1/4	3	6 3/8	1	6 1/4	4	7
0	6 3/8	1	5 5/8	0	10 3/8	2	6 1/4	1	2 3/8	3	6 3/4	1	6 3/8	4	7 3/8
0	6 1/2	1	6	0	10 1/2	2	6 5/8	1	2 1/2	3	7 1/8	1	6 1/2	4	7 3/4
0	6 5/8	1	6 1/2	0	10 5/8	2	7	1	2 5/8	3	7 5/8	1	6 5/8	4	8 1/8
0	6 3/4	1	6 7/8	0	10 3/4	2	7 3/8	1	2 3/4	3	8	1	6 3/4	4	8 1/2
0	6 7/8	1	7 1/4	0	10 7/8	2	7 3/4	1	2 7/8	3	8 3/8	1	6 7/8	4	8 7/8
0	7	1	7 5/8	0	11	2	8 1/4	1	3	3	8 3/4	1	7	4	9 1/4
0	7 1/8	1	8	0	11 1/8	2	8 5/8	1	3 1/8	3	9 1/8	1	7 1/8	4	9 5/8
0	7 1/4	1	8 3/8	0	11 1/4	2	9	1	3 1/4	3	9 1/2	1	7 1/4	4	10 1/8
0	7 3/8	1	8 3/4	0	11 3/8	2	9 3/8	1	3 3/8	3	9 7/8	1	7 3/8	4	10 1/2
0	7 1/2	1	9 1/8	0	11 1/2	2	9 3/4	1	3 1/2	3	10 3/8	1	7 1/2	4	10 7/8
0	7 5/8	1	9 1/2	0	11 5/8	2	10 1/8	1	3 5/8	3	10 3/4	1	7 5/8	4	11 1/4
0	7 3/4	1	10	0	11 3/4	2	10 1/2	1	3 3/4	3	11 1/8	1	7 3/4	4	11 5/8
0	7 7/8	1	10 3/8	0	11 7/8	2	10 7/8	1	3 7/8	3	11 1/2	1	7 7/8	5	0
0	8	1	10 3/4	1	0	2	11 3/8	1	4	3	11 7/8	1	8	5	0 3/8
0	8 1/8	1	11 1/8	1	0 1/8	2	11 3/4	1	4 1/8	4	0 1/4	1	8 1/8	5	0 7/8
0	8 1/4	1	11 1/2	1	0 1/4	3	0 1/8	1	4 1/4	4	0 5/8	1	8 1/4	5	1 1/4
0	8 3/8	1	11 7/8	1	0 3/8	3	0 1/2	1	4 3/8	4	1	1	8 3/8	5	1 5/8
0	8 1/2	2	0 3/8	1	0 1/2	3	0 7/8	1	4 1/2	4	1 3/8	1	8 1/2	5	2
0	8 5/8	2	0 3/4	1	0 5/8	3	1 1/4	1	4 5/8	4	1 7/8	1	8 5/8	5	2 3/8
0	8 3/4	2	1 1/8	1	0 3/4	3	1 5/8	1	4 3/4	4	2 1/4	1	8 3/4	5	2 3/4
0	8 7/8	2	1 1/2	1	0 7/8	3	2	1	4 7/8	4	2 5/8	1	8 7/8	5	3 1/8
0	9	2	1 7/8	1	1	3	2 1/2	1	5	4	3	1	9	5	3 5/8
0	9 1/8	2	2 3/8	1	1 1/8	3	2 7/8	1	5 1/8	4	3 3/8	1	9 1/8	5	4
0	9 1/4	2	2 3/4	1	1 1/4	3	3 1/4	1	5 1/4	4	3 3/4	1	9 1/4	5	4 3/8
0	9 3/8	2	3 1/8	1	1 3/8	3	3 5/8	1	5 3/8	4	4 1/8	1	9 3/8	5	4 3/4
0	9 1/2	2	3 1/2	1	1 1/2	3	4	1	5 1/2	4	4 1/2	1	9 1/2	5	5 1/8
0	9 5/8	2	3 7/8	1	1 5/8	3	4 3/8	1	5 5/8	4	5	1	9 5/8	5	5 1/2
0	9 3/4	2	4 1/4	1	1 3/4	3	4 7/8	1	5 3/4	4	5 3/8	1	9 3/4	5	5 7/8
0	9 7/8	2	4 5/8	1	1 7/8	3	5 1/4	1	5 7/8	4	5 3/4	1	9 7/8	5	6 3/8

For Angle Iron measuring $\frac{3}{8}$ of an Inch thick, diagonally across the ro

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN
1	10	5	6¾	2	2	6	7¼	2	6	7	7⅞	2	10	8	8⅜
1	10⅛	5	7⅛	2	2⅛	6	7⅜	2	6⅛	7	8¼	2	10⅛	8	8⅞
1	10¼	5	7½	2	2¼	6	8⅛	2	6¼	7	8⅜	2	10¼	8	9¼
1	10⅜	5	8	2	2⅜	6	8¼	2	6⅜	7	9	2	10⅜	8	9⅝
1	10½	5	8⅜	2	2½	6	8⅝	2	6½	7	9⅜	2	10½	8	10
1	10⅝	5	8¾	2	2⅝	6	9¼	2	6⅝	7	9¾	2	10⅝	8	10⅜
1	10¾	5	9⅛	2	2¾	6	9⅜	2	6¾	7	10¼	2	10¾	8	10¾
1	10⅞	5	9½	2	2⅞	6	10	2	6⅞	7	10⅜	2	10⅞	8	11⅛
1	11	5	9⅞	2	3	6	10⅛	2	7	7	11	2	11	8	11½
1	11⅛	5	10¼	2	3⅛	6	10⅞	2	7⅛	7	11⅜	2	11⅛	9	0
1	11¼	5	10⅜	2	3¼	6	11¼	2	7¼	7	11¾	2	11¼	9	0⅜
1	11⅜	5	11	2	3⅜	6	11⅝	2	7⅜	8	0⅛	2	11⅜	9	0¾
1	11½	5	11½	2	3½	7	0	2	7½	8	0½	2	11½	9	1⅛
1	11⅝	5	11⅞	2	3⅝	7	0⅜	2	7⅝	8	1	2	11⅝	9	1½
1	11¾	6	0¼	2	3¾	7	0¾	2	7¾	8	1⅜	2	11¾	9	1⅞
1	11⅞	6	0⅝	2	3⅞	7	1⅛	2	7⅞	8	1¾	2	11⅞	9	2⅜
2	0	6	1	2	4	7	1½	2	8	8	2⅛	3	0	9	2¾
2	0⅛	6	1⅜	2	4⅛	7	2	2	8⅛	8	2½	3	0⅛	9	3⅛
2	0¼	6	1¾	2	4¼	7	2⅜	2	8¼	8	2⅞	3	0¼	9	3½
2	0⅜	6	2¼	2	4⅜	7	2¾	2	8⅜	8	3⅜	3	0⅜	9	3⅞
2	0½	6	2⅝	2	4½	7	3⅛	2	8½	8	3¾	3	0½	9	4¼
2	0⅝	6	3	2	4⅝	7	3½	2	8⅝	8	4⅛	3	0⅝	9	4⅝
2	0¾	6	3⅜	2	4¾	7	3⅞	2	8¾	8	4½	3	0¾	9	5
2	0⅞	6	3¾	2	4⅞	7	4⅜	2	8⅞	8	4⅞	3	0⅞	9	5½
2	1	6	4⅛	2	5	7	4¾	2	9	8	5¼	3	1	9	5⅞
2	1⅛	6	4½	2	5⅛	7	5⅛	2	9⅛	8	5⅝	3	1⅛	9	6¼
2	1¼	6	4⅞	2	5¼	7	5½	2	9¼	8	6	3	1¼	9	6⅝
2	1⅜	6	5⅜	2	5⅜	7	5⅞	2	9⅜	8	6½	3	1⅜	9	7
2	1½	6	5¾	2	5½	7	6¼	2	9½	8	6⅞	3	1½	9	7⅜
2	1⅝	6	6⅛	2	5⅝	7	6⅝	2	9⅝	8	7¼	3	1⅝	9	7¾
2	1¾	6	6½	2	5¾	7	7	2	9¾	8	7⅝	3	1¾	9	8¼
2	1⅞	6	6⅞	2	5⅞	7	7⅜	2	9⅞	8	8	3	1⅞	9	8⅝

For Angle Iron measuring $\frac{3}{8}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN
3	2	9	9	3	6	10	9½	3	10	11	10⅛	4	2	12	10¾
3	2⅛	9	9⅜	3	6⅛	10	9⅞	3	10⅛	11	10½	4	2⅛	12	11⅛
3	2¼	9	9¾	3	6¼	10	10⅜	3	10¼	11	10⅞	4	2¼	12	11⅛
3	2⅜	9	10⅛	3	6⅜	10	10¾	3	10⅜	11	11¼	4	2⅜	12	11⅞
3	2½	9	10½	3	6½	10	11⅛	3	10½	11	11⅝	4	2½	13	0¼
3	2⅝	9	10⅞	3	6⅝	10	11½	3	10⅝	12	0⅛	4	2⅝	13	0⅝
3	2¾	9	11⅜	3	6¾	10	11⅞	3	10¾	12	0½	4	2¾	13	1
3	2⅞	9	11¾	3	6⅞	11	0⅜	3	10⅞	12	0⅞	4	2⅞	13	1⅛
3	3	10	0⅛	3	7	11	0¾	3	11	12	1¼	4	3	13	1⅞
3	3⅛	10	0½	3	7⅛	11	1⅛	3	11⅛	12	1⅝	4	3⅛	13	2¼
3	3¼	10	0⅞	3	7¼	11	1½	3	11¼	12	2	4	3¼	13	2⅝
3	3⅜	10	1⅜	3	7⅜	11	1⅞	3	11⅜	12	2⅜	4	3⅜	13	3
3	3½	10	1¾	3	7½	11	2¼	3	11½	12	2⅞	4	3½	13	3⅜
3	3⅝	10	2⅛	3	7⅝	11	2⅝	3	11⅝	12	3¼	4	3⅝	13	3¾
3	3¾	10	2½	3	7¾	11	3	3	11¾	12	3⅝	4	3¾	13	4¼
3	3⅞	10	2⅞	3	7⅞	11	3½	3	11⅞	12	4	4	3⅞	13	4⅝
3	4	10	3¼	3	8	11	3⅞	4	0	12	4⅜	4	4	13	5
3	4⅛	10	3⅜	3	8⅛	11	4¼	4	0⅛	12	4¾	4	4⅛	13	5⅜
3	4¼	10	4	3	8¼	11	4⅝	4	0¼	12	5¼	4	4¼	13	5¾
3	4⅜	10	4½	3	8⅜	11	5	4	0⅜	12	5⅝	4	4⅜	13	6⅛
3	4½	10	4⅞	3	8½	11	5⅜	4	0½	12	6	4	4½	13	6½
3	4⅝	10	5¼	3	8⅝	11	5¾	4	0⅝	12	6⅜	4	4⅝	13	7
3	4¾	10	5⅝	3	8¾	11	6¼	4	0¾	12	6¾	4	4¾	13	7⅜
3	4⅞	10	6	3	8⅞	11	6⅝	4	0⅞	12	7⅛	4	4⅞	13	7¾
3	5	10	6⅜	3	9	11	7	4	1	12	7½	4	5	13	8⅛
3	5⅛	10	6⅞	3	9⅛	11	7⅜	4	1⅛	12	7⅞	4	5⅛	13	8½
3	5¼	10	7¼	3	9¼	11	7¾	4	1¼	12	8⅜	4	5¼	13	8⅞
3	5⅜	10	7⅝	3	9⅜	11	8⅛	4	1⅜	12	8¾	4	5⅜	13	9¼
3	5½	10	8	3	9½	11	8½	4	1½	12	9⅛	4	5½	13	9⅝
3	5⅝	10	8⅜	3	9⅝	11	8⅞	4	1⅝	12	9½	4	5⅝	13	10⅛
3	5¾	10	8¾	3	9¾	11	9⅜	4	1¾	12	9⅞	4	5¾	13	10½
3	5⅞	10	9⅛	3	9⅞	11	9¾	4	1⅞	12	10⅜	4	5⅞	13	10⅞

For Angle Iron measuring $\frac{3}{8}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN
4	6	13	11¼	4	10	14	11⅞	5	2	16	0⅜	5	6	17	1
4	6⅛	13	11⅝	4	10⅛	15	0¼	5	2⅛	16	0¾	5	6⅛	17	1⅜
4	6¼	14	0	4	10¼	15	0⅝	5	2¼	16	1⅛	5	6¼	17	1¾
4	6⅜	14	0⅜	4	10⅜	15	1	5	2⅜	16	1⅝	5	6⅜	17	2⅛
4	6½	14	0⅞	4	10½	15	1⅜	5	2½	16	2	5	6½	17	2½
4	6⅝	14	1¼	4	10⅝	15	1⅞	5	2⅝	16	2⅜	5	6⅝	17	2⅞
4	6¾	14	1⅝	4	10¾	15	2¼	5	2¾	16	2¾	5	6¾	17	3⅜
4	6⅞	14	2	4	10⅞	15	2⅝	5	2⅞	16	3⅛	5	6⅞	17	3¾
4	7	14	2⅜	4	11	15	3	5	3	16	3½	5	7	17	4⅛
4	7⅛	14	2¾	4	11⅛	15	3⅜	5	3⅛	16	3⅞	5	7⅛	17	4½
4	7¼	14	3⅛	4	11¼	15	3¾	5	3¼	16	4⅜	5	7¼	17	4⅞
4	7⅜	14	3½	4	11⅜	15	4⅛	5	3⅜	16	4¾	5	7⅜	17	5¼
4	7½	14	4	4	11½	15	4½	5	3½	16	5⅛	5	7½	17	5⅝
4	7⅝	14	4⅜	4	11⅝	15	4⅞	5	3⅝	16	5½	5	7⅝	17	6
4	7¾	14	4¾	4	11¾	15	5⅜	5	3¾	16	5⅞	5	7¾	17	6½
4	7⅞	14	5⅛	4	11⅞	15	5¾	5	3⅞	16	6¼	5	7⅞	17	6⅞
4	8	14	5½	5	0	15	6⅛	5	4	16	6⅝	5	8	17	7¼
4	8⅛	14	5⅞	5	0⅛	15	6½	5	4⅛	16	7	5	8⅛	17	7⅝
4	8¼	14	6⅜	5	0¼	15	6⅞	5	4¼	16	7⅜	5	8¼	17	8
4	8⅜	14	6¾	5	0⅜	15	7¼	5	4⅜	16	7⅞	5	8⅜	17	8⅜
4	8½	14	7⅛	5	0½	15	7¾	5	4½	16	8¼	5	8½	17	8⅞
4	8⅝	14	7½	5	0⅝	15	8⅛	5	4⅝	16	8⅝	5	8⅝	17	9¼
4	8¾	14	7⅞	5	0¾	15	8½	5	4¾	16	9	5	8¾	17	9⅝
4	8⅞	14	8¼	5	0⅞	15	8⅞	5	4⅞	16	9⅜	5	8⅞	17	10
4	9	14	8¾	5	1	15	9¼	5	5	16	9⅞	5	9	17	10⅜
4	9⅛	14	9⅛	5	1⅛	15	9⅝	5	5⅛	16	10¼	5	9⅛	17	10¾
4	9¼	14	9⅜	5	1¼	15	10	5	5¼	16	10⅝	5	9¼	17	11⅛
4	9⅜	14	9⅞	5	1⅜	15	10⅜	5	5⅜	16	11	5	9⅜	17	11½
4	9½	14	10¼	5	1½	15	10⅞	5	5½	16	11⅜	5	9½	18	0
4	9⅝	14	10⅝	5	1⅝	15	11¼	5	5⅝	16	11¾	5	9⅝	18	0⅜
4	9¾	14	11	5	1¾	15	11⅝	5	5¾	17	0⅛	5	9¾	18	0¾
4	9⅞	14	11⅓	5	1⅞	16	0	5	5⅞	17	0⅝	5	9⅞	18	1⅛

For Angle Iron measuring $\frac{3}{8}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN
5	10	18	1½	6	2	19	2⅛	6	6	20	2⅝	6	10	21	3¼
5	10⅛	18	1⅞	6	2⅛	19	2½	6	6⅛	20	3	6	10⅛	21	3⅝
5	10¼	18	2⅜	6	2¼	19	2⅞	6	6¼	20	3½	6	10¼	21	4
5	10⅜	18	2¾	6	2⅜	19	3¼	6	6⅜	20	3⅞	6	10⅜	21	4⅜
5	10½	18	3⅛	6	2½	19	3⅝	6	6½	20	4¼	6	10½	21	4¾
5	10⅝	18	3½	6	2⅝	19	4	6	6⅝	20	4⅝	6	10⅝	21	5⅛
5	10¾	18	3⅞	6	2¾	19	4½	6	6¾	20	5	6	10¾	21	5⅛
5	10⅞	18	4¼	6	2⅞	19	4⅞	6	6⅞	20	5⅜	6	10⅞	21	6
5	11	18	4⅝	6	3	19	5¼	6	7	20	5⅞	6	11	21	6⅜
5	11⅛	18	5	6	3⅛	19	5⅝	6	7⅛	20	6¼	6	11⅛	21	6¾
5	11¼	18	5½	6	3¼	19	6	6	7¼	20	6⅝	6	11¼	21	7⅛
5	11⅜	18	5⅞	6	3⅜	19	6⅜	6	7⅜	20	7	6	11⅜	21	7⅝
5	11½	18	6¼	6	3½	19	6⅞	6	7½	20	7⅜	6	11½	21	8
5	11⅝	18	6⅝	6	3⅝	19	7¼	6	7⅝	20	7¾	6	11⅝	21	8⅜
5	11¾	18	7	6	3¾	19	7⅝	6	7¾	20	8⅛	6	11¾	21	8¾
5	11⅞	18	7⅜	6	3⅞	19	8	6	7⅞	20	8½	6	11⅞	21	9⅛
6	0	18	7⅞	6	4	19	8⅜	6	8	20	9	7	0	21	9½
6	0⅛	18	8¼	6	4⅛	19	8¾	6	8⅛	20	9⅜	7	0⅛	21	9⅞
6	0¼	18	8⅝	6	4¼	19	9⅛	6	8¼	20	9¾	7	0¼	21	10⅜
6	0⅜	18	9	6	4⅜	19	9⅝	6	8⅜	20	10⅛	7	0⅜	21	10¾
6	0½	18	9⅜	6	4½	19	10	6	8½	20	10½	7	0½	21	11⅛
6	0⅝	18	9¾	6	4⅝	19	10⅜	6	8⅝	20	10⅞	7	0⅝	21	11½
6	0¾	18	10⅛	6	4¾	19	10¾	6	8¾	20	11⅜	7	0¾	21	11⅞
6	0⅞	18	10½	6	4⅞	19	11⅛	6	8⅞	20	11¾	7	0⅞	22	0¼
6	1	18	11	6	5	19	11½	6	9	21	0⅛	7	1	22	0⅝
6	1⅛	18	11⅜	6	5⅛	19	11⅞	6	9⅛	21	0½	7	1⅛	22	1
6	1¼	18	11¾	6	5¼	20	0⅜	6	9¼	21	0⅞	7	1¼	22	1½
6	1⅜	19	0⅛	6	5⅜	20	0¾	6	9⅜	21	1¼	7	1⅜	22	1⅞
6	1½	19	0½	6	5½	20	1⅛	6	9½	21	1⅝	7	1½	22	2¼
6	1⅝	19	0⅞	6	5⅝	20	1½	6	9⅝	21	2	7	1⅝	22	2⅝
6	1¾	19	1⅜	6	5¾	20	1⅞	6	9¾	21	2½	7	1¾	22	3
6	1⅞	19	1¾	6	5⅞	20	2¼	6	9⅞	21	2⅞	7	1⅞	22	3⅜

For Angle Iron measuring $\frac{1}{8}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN
7	2	22	3 7/8	7	6	23	4 3/8	7	10	24	4 7/8	8	2	25	5 1/2
7	2 1/8	22	4 1/4	7	6 1/8	23	4 3/4	7	10 1/8	24	5 3/8	8	2 1/8	25	5 7/8
7	2 1/4	22	4 5/8	7	6 1/4	23	5 1/8	7	10 1/4	24	5 3/4	8	2 1/4	25	6 1/4
7	2 3/8	22	5	7	6 3/8	23	5 1/2	7	10 3/8	24	6 1/8	8	2 3/8	25	6 5/8
7	2 1/2	22	5 3/8	7	6 1/2	23	6	7	10 1/2	24	6 1/2	8	2 1/2	25	7
7	2 5/8	22	5 3/4	7	6 5/8	23	6 3/8	7	10 5/8	24	6 7/8	8	2 5/8	25	7 1/2
7	2 3/4	22	6 1/8	7	6 3/4	23	6 3/4	7	10 3/4	24	7 1/4	8	2 3/4	25	7 7/8
7	2 7/8	22	6 1/2	7	6 7/8	23	7 1/8	7	10 7/8	24	7 5/8	8	2 7/8	25	8 1/4
7	3	22	7	7	7	23	7 1/2	7	11	24	8	8	3	25	8 5/8
7	3 1/8	22	7 3/8	7	7 1/8	23	7 7/8	7	11 1/8	24	8 1/2	8	3 1/8	25	9
7	3 1/4	22	7 3/4	7	7 1/4	23	8 1/4	7	11 1/4	24	8 7/8	8	3 1/4	25	9 1/2
7	3 3/8	22	8 1/8	7	7 3/8	23	8 3/4	7	11 3/8	24	9 1/4	8	3 3/8	25	9 7/8
7	3 1/2	22	8 1/2	7	7 1/2	23	9 1/8	7	11 1/2	24	9 5/8	8	3 1/2	25	10 1/4
7	3 5/8	22	8 7/8	7	7 5/8	23	9 1/2	7	11 5/8	24	10	8	3 5/8	25	10 5/8
7	3 3/4	22	9 1/4	7	7 3/4	23	9 7/8	7	11 3/4	24	10 1/2	8	3 3/4	25	11
7	3 7/8	22	9 3/4	7	7 7/8	23	10 1/4	7	11 7/8	24	10 7/8	8	3 7/8	25	11 3/8
7	4	22	10 1/8	7	8	23	10 5/8	8	0	24	11 1/4	8	4	25	11 3/4
7	4 1/8	22	10 1/2	7	8 1/8	23	11	8	0 1/8	24	11 5/8	8	4 1/8	26	0 1/8
7	4 1/4	22	10 7/8	7	8 1/4	23	11 1/2	8	0 1/4	25	0	8	4 1/4	26	0 5/8
7	4 3/8	22	11 1/4	7	8 3/8	23	11 7/8	8	0 3/8	25	0 3/8	8	4 3/8	26	1
7	4 1/2	22	11 5/8	7	8 1/2	24	0 1/4	8	0 1/2	25	0 3/4	8	4 1/2	26	1 3/8
7	4 5/8	23	0	7	8 5/8	24	0 5/8	8	0 5/8	25	1 1/4	8	4 5/8	26	1 3/4
7	4 3/4	23	0 1/2	7	8 3/4	24	1	8	0 3/4	25	1 5/8	8	4 3/4	26	2 1/8
7	4 7/8	23	0 7/8	7	8 7/8	24	1 3/8	8	0 7/8	25	2	8	4 7/8	26	2 1/2
7	5	23	1 1/4	7	9	24	1 3/4	8	1	25	2 3/8	8	5	26	2 7/8
7	5 1/8	23	1 5/8	7	9 1/8	24	2 1/4	8	1 1/8	25	2 3/4	8	5 1/8	26	3 3/8
7	5 1/4	23	2	7	9 1/4	24	2 5/8	8	1 1/4	25	3 1/8	8	5 1/4	26	3 3/4
7	5 3/8	23	2 3/8	7	9 3/8	24	3	8	1 3/8	25	3 1/2	8	5 3/8	26	4 1/8
7	5 1/2	23	2 3/4	7	9 1/2	24	3 3/8	8	1 1/2	25	3 7/8	8	5 1/2	26	4 1/2
7	5 5/8	23	3 1/4	7	9 5/8	24	3 3/4	8	1 5/8	25	4 3/8	8	5 5/8	26	4 7/8
7	5 3/4	23	3 5/8	7	9 3/4	24	4 1/8	8	1 3/4	25	4 3/4	8	5 3/4	26	5 1/4
7	5 7/8	23	4	7	9 7/8	24	4 1/2	8	1 7/8	25	5 1/8	8	5 7/8	26	5 5/8

TABLE XII.

For Angle Iron measuring ½ an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
0	6	1	8⅝	0	10	2	4¼	1	2	3	4⅞	1	6	4	5⅜
0	6⅛	1	4	0	10⅛	2	4⅜	1	2⅛	3	5¼	1	6⅛	4	5¾
0	6¼	1	4⅛	0	10¼	2	5	1	2¼	3	5⅜	1	6¼	4	6⅛
0	6⅜	1	4⅞	0	10⅜	2	5½	1	2⅜	3	6	1	6⅜	4	6¼
0	6½	1	5¼	0	10½	2	5⅞	1	2½	3	6⅜	1	6½	4	7
0	6⅝	1	5⅜	0	10⅝	2	6¼	1	2⅝	3	6¾	1	6⅝	4	7⅜
0	6¾	1	6	0	10¾	2	6⅜	1	2¾	3	7⅛	1	6¾	4	7¾
0	6⅞	1	6½	0	10⅞	2	7	1	2⅞	3	7⅝	1	6⅞	4	8⅛
0	7	1	6⅞	0	11	2	7⅜	1	3	3	8	1	7	4	8½
0	7⅛	1	7¼	0	11⅛	2	7¾	1	3⅛	3	8⅜	1	7⅛	4	8⅞
0	7¼	1	7⅜	0	11¼	2	8¼	1	3¼	3	8¾	1	7¼	4	9¼
0	7⅜	1	8	0	11⅜	2	8⅝	1	3⅜	3	9⅛	1	7⅜	4	9⅝
0	7½	1	8⅜	0	11½	2	9	1	3½	3	9½	1	7½	4	10⅛
0	7⅝	1	8¾	0	11⅝	2	9⅜	1	3⅝	3	9⅞	1	7⅝	4	10½
0	7¾	1	9⅛	0	11¾	2	9¾	1	3¾	3	10⅜	1	7¾	4	10⅞
0	7⅞	1	9½	0	11⅞	2	10⅛	1	3⅞	3	10¾	1	7⅞	4	11¼
0	8	1	10	1	0	2	10½	1	4	3	11⅛	1	8	4	11⅝
0	8⅛	1	10⅜	1	0⅛	2	10⅞	1	4⅛	3	11½	1	8⅛	5	0
0	8¼	1	10¾	1	0¼	2	11⅜	1	4¼	3	11⅞	1	8¼	5	0⅜
0	8⅜	1	11⅛	1	0⅜	2	11¾	1	4⅜	4	0¼	1	8⅜	5	0⅞
0	8½	1	11½	1	0½	3	0⅛	1	4½	4	0⅝	1	8½	5	1¼
0	8⅝	1	11⅞	1	0⅝	3	0½	1	4⅝	4	1	1	8⅝	5	1⅝
0	8¾	2	0⅜	1	0¾	3	0⅞	1	4¾	4	1⅜	1	8¾	5	2
0	8⅞	2	0¾	1	0⅞	3	1¼	1	4⅞	4	1⅞	1	8⅞	5	2⅜
0	9	2	1⅛	1	1	3	1⅝	1	5	4	2¼	1	9	5	2¾
0	9⅛	2	1½	1	1⅛	3	2	1	5⅛	4	2⅝	1	9⅛	5	3⅛
0	9¼	2	1⅞	1	1¼	3	2⅓	1	5¼	4	3	1	9¼	5	3⅝
0	9⅜	2	2⅜	1	1⅜	3	2⅞	1	5⅜	4	3⅜	1	9⅜	5	4
0	9½	2	2¾	1	1½	3	3¼	1	5½	4	3¾	1	9½	5	4⅜
0	9⅝	2	3⅛	1	1⅝	3	3⅝	1	5⅝	4	4⅛	1	9⅝	5	4¾
0	9¾	2	3½	1	1¾	3	4	1	5¾	4	4½	1	9¾	5	5⅛
0	9⅞	2	3⅞	1	1⅞	3	4⅜	1	5⅞	4	5	1	9⅞	5	5½

For Angle Iron measuring ½ an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
1	10	5	5 7/8	2	2	6	6 1/2	2	6	7	7	2	10	8	7 5/8
1	10 1/8	5	6 3/8	2	2 1/8	6	6 7/8	2	6 1/8	7	7 1/2	2	10 1/8	8	8
1	10 1/4	5	6 3/4	2	2 1/4	6	7 1/4	2	6 1/4	7	7 7/8	2	10 1/4	8	8 3/8
1	10 3/8	5	7 1/8	2	2 3/8	6	7 5/8	2	6 3/8	7	8 1/4	2	10 3/8	8	8 7/8
1	10 1/2	5	7 1/2	2	2 1/2	6	8 1/8	2	6 1/2	7	8 5/8	2	10 1/2	8	9 1/4
1	10 5/8	5	8	2	2 5/8	6	8 1/2	2	6 5/8	7	9	2	10 5/8	8	9 5/8
1	10 3/4	5	8 3/8	2	2 3/4	6	8 7/8	2	6 3/4	7	9 3/8	2	10 3/4	8	10
1	10 7/8	5	8 3/4	2	2 7/8	6	9 1/4	2	6 7/8	7	9 3/4	2	10 7/8	8	10 3/8
1	11	5	9 1/8	2	3	6	9 5/8	2	7	7	10 1/4	2	11	8	10 3/4
1	11 1/8	5	9 1/2	2	3 1/8	6	10	2	7 1/8	7	10 5/8	2	11 1/8	8	11 1/8
1	11 1/4	5	9 7/8	2	3 1/4	6	10 1/2	2	7 1/4	7	11	2	11 1/4	8	11 1/2
1	11 3/8	5	10 1/4	2	3 3/8	6	10 7/8	2	7 3/8	7	11 3/8	2	11 3/8	9	0
1	11 1/2	5	10 5/8	2	3 1/2	6	11 1/4	2	7 1/2	7	11 3/4	2	11 1/2	9	0 3/8
1	11 5/8	5	11	2	3 5/8	6	11 5/8	2	7 5/8	8	0 1/8	2	11 5/8	9	0 3/4
1	11 3/4	5	11 1/2	2	3 3/4	7	0	2	7 3/4	8	0 1/2	2	11 3/4	9	1 1/8
1	11 7/8	5	11 7/8	2	3 7/8	7	0 3/8	2	7 7/8	8	1	2	11 7/8	9	1 1/2
2	0	6	0 1/4	2	4	7	0 3/4	2	8	8	1 3/8	3	0	9	1 7/8
2	0 1/8	6	0 5/8	2	4 1/8	7	1 1/8	2	8 1/8	8	1 3/4	3	0 1/8	9	2 3/8
2	0 1/4	6	1	2	4 1/4	7	1 1/2	2	8 1/4	8	2 1/8	3	0 1/4	9	2 3/4
2	0 3/8	6	1 3/8	2	4 3/8	7	2	2	8 3/8	8	2 1/2	3	0 3/8	9	3 1/8
2	0 1/2	6	1 3/4	2	4 1/2	7	2 3/8	2	8 1/2	8	2 7/8	3	0 1/2	9	3 1/2
2	0 5/8	6	2 1/4	2	4 5/8	7	2 3/4	2	8 5/8	8	3 3/8	3	0 5/8	9	3 7/8
2	0 3/4	6	2 5/8	2	4 3/4	7	3 1/8	2	8 3/4	8	3 3/4	3	0 3/4	9	4 1/4
2	0 7/8	6	3	2	4 7/8	7	3 1/2	2	8 7/8	8	4 1/8	3	0 7/8	9	4 5/8
2	1	6	3 3/8	2	5	7	3 7/8	2	9	8	4 1/2	3	1	9	5
2	1 1/8	6	3 3/4	2	5 1/8	7	4 3/8	2	9 1/8	8	4 7/8	3	1 1/8	9	5 1/2
2	1 1/4	6	4 1/8	2	5 1/4	7	4 3/4	2	9 1/4	8	5 1/4	3	1 1/4	9	5 7/8
2	1 3/8	6	4 1/2	2	5 3/8	7	5 1/8	2	9 3/8	8	5 5/8	3	1 3/8	9	6 1/4
2	1 1/2	6	4 7/8	2	5 1/2	7	5 1/2	2	9 1/2	8	6	3	1 1/2	9	6 5/8
2	1 5/8	6	5 3/8	2	5 5/8	7	5 7/8	2	9 5/8	8	6 1/2	3	1 5/8	9	7
2	1 3/4	6	5 3/4	2	5 3/4	7	6 1/4	2	9 3/4	8	6 7/8	3	1 3/4	9	7 3/8
2	1 7/8	6	6 1/8	2	5 7/8	7	6 5/8	2	9 7/8	8	7 1/4	3	1 7/8	9	7 7/8

For Angle Iron measuring ½ an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
3	2	9	8¼	3	6	10	8¾	3	10	11	9⅜	4	2	12	9⅞
3	2⅛	9	8⅜	3	6⅛	10	9⅛	3	10⅛	11	9½	4	2⅛	12	10⅜
3	2¼	9	9	3	6¼	10	9½	3	10¼	11	10⅛	4	2¼	12	10¾
3	2⅜	9	9⅜	3	6⅜	10	9⅞	3	10⅜	11	10½	4	2⅜	12	11⅛
3	2½	9	9¾	3	6½	10	10⅜	3	10½	11	10⅞	4	2½	12	11½
3	2⅝	9	10⅛	3	6⅝	10	10¾	3	10⅝	11	11¼	4	2⅝	12	11⅞
3	2¾	9	10½	3	6¾	10	11⅛	3	10¾	11	11⅝	4	2¾	13	0¼
3	2⅞	9	10⅞	3	6⅞	10	11½	3	10⅞	12	0⅛	4	2⅞	13	0⅝
3	3	9	11⅜	3	7	10	11⅞	3	11	12	0½	4	3	13	1
3	3⅛	9	11¾	3	7⅛	11	0⅜	3	11⅛	12	0⅞	4	3⅛	13	1⅓
3	3¼	10	0⅛	3	7¼	11	0¾	3	11¼	12	1¼	4	3¼	13	1⅞
3	3⅜	10	0½	3	7⅜	11	1⅛	3	11⅜	12	1⅝	4	3⅜	13	2¼
3	3½	10	0⅞	3	7½	11	1½	3	11½	12	2	4	3½	13	2⅝
3	3⅝	10	1⅜	3	7⅝	11	1⅞	3	11⅝	12	2⅜	4	3⅝	13	3
3	3¾	10	1¾	3	7¾	11	2¼	3	11¾	12	2⅞	4	3¾	13	3⅜
3	3⅞	10	2⅛	3	7⅞	11	2⅝	3	11⅞	12	3¼	4	3⅞	13	3¾
3	4	10	2½	3	8	11	3	4	0	12	3⅝	4	4	13	4¼
3	4⅛	10	2⅞	3	8⅛	11	3½	4	0⅛	12	4	4	4⅛	13	4⅝
3	4¼	10	3¼	3	8¼	11	3⅞	4	0¼	12	4⅜	4	4¼	13	5
3	4⅜	10	3⅝	3	8⅜	11	4¼	4	0⅜	12	4¾	4	4⅜	13	5⅜
3	4½	10	4	3	8½	11	4⅝	4	0½	12	5¼	4	4½	13	5¾
3	4⅝	10	4½	3	8⅝	11	5	4	0⅝	12	5⅝	4	4⅝	13	6⅛
3	4¾	10	4⅞	3	8¾	11	5⅜	4	0¾	12	6	4	4¾	13	6½
3	4⅞	10	5¼	3	8⅞	11	5¾	4	0⅞	12	6⅜	4	4⅞	13	7
3	5	10	5⅝	3	9	11	6¼	4	1	12	6¾	4	5	13	7⅜
3	5⅛	10	6	3	9⅛	11	6⅝	4	1⅛	12	7⅛	4	5⅛	13	7¾
3	5¼	10	6⅜	3	9¼	11	7	4	1¼	12	7½	4	5¼	13	8⅛
3	5⅜	10	6⅞	3	9⅜	11	7⅜	4	1⅜	12	7⅞	4	5⅜	13	8½
3	5½	10	7¼	3	9½	11	7¾	4	1½	12	8⅜	4	5½	13	8⅞
3	5⅝	10	7⅝	3	9⅝	11	8⅛	4	1⅝	12	8¾	4	5⅝	13	9¼
3	5¾	10	8	3	9¾	11	8½	4	1¾	12	9⅛	4	5¾	13	9⅝
3	5⅞	10	8⅜	3	9⅞	11	8⅞	4	1⅞	12	9½	4	5⅞	13	10⅛

For Angle Iron measuring ½ an Inch thick, diagonally across the roo

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRE FOR RING
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN
4	6	13	10½	4	10	14	11	5	2	15	11⅛	5	6	17	0
4	6⅛	13	10⅞	4	10⅛	14	11½	5	2⅛	16	0	5	6⅛	17	0
4	6¼	13	11¼	4	10¼	14	11⅝	5	2¼	16	0⅜	5	6¼	17	1
4	6⅜	13	11⅛	4	10⅜	15	0¼	5	2⅜	16	0¾	5	6⅜	17	1
4	6½	14	0	4	10½	15	0⅜	5	2½	16	1⅛	5	6½	17	1
4	6⅝	14	0⅜	4	10⅝	15	1	5	2⅝	16	1⅝	5	6⅝	17	2
4	6¾	14	0⅞	4	10¾	15	1⅜	5	2¾	16	2	5	6¾	17	2
4	6⅞	14	1¼	4	10⅞	15	1⅞	5	2⅞	16	2⅜	5	6⅞	17	2
4	7	14	1⅝	4	11	15	2¼	5	3	16	2¾	5	7	17	3
4	7⅛	14	2	4	11⅛	15	2⅜	5	3⅛	16	3⅛	5	7⅛	17	3
4	7¼	14	2⅜	4	11¼	15	3	5	3¼	16	3½	5	7¼	17	4
4	7⅜	14	2¾	4	11⅜	15	3⅜	5	3⅜	16	3⅞	5	7⅜	17	4
4	7½	14	3⅛	4	11½	15	3¾	5	3½	16	4⅜	5	7½	17	4
4	7⅝	14	3½	4	11⅝	15	4⅛	5	3⅝	16	4¾	5	7⅝	17	5
4	7¾	14	4	4	11¾	15	4½	5	3¾	16	5⅛	5	7¾	17	5
4	7⅞	14	4⅜	4	11⅞	15	4⅞	5	3⅞	16	5½	5	7⅞	17	6
4	8	14	4¾	5	0	15	5⅜	5	4	16	5⅞	5	8	17	6
4	8⅛	14	5⅛	5	0⅛	15	5¾	5	4⅛	16	6¼	5	8⅛	17	6
4	8¼	14	5½	5	0¼	15	6⅛	5	4¼	16	6⅝	5	8¼	17	7
4	8⅜	14	5⅞	5	0⅜	15	6½	5	4⅜	16	7	5	8⅜	17	7
4	8½	14	6⅜	5	0½	15	6⅞	5	4½	16	7½	5	8½	17	8
4	8⅝	14	6¾	5	0⅝	15	7¼	5	4⅝	16	7⅞	5	8⅝	17	8
4	8¾	14	7⅛	5	0¾	15	7¾	5	4¾	16	8¼	5	8¾	17	8
4	8⅞	14	7½	5	0⅞	15	8⅛	5	4⅞	16	8⅝	5	8⅞	17	9
4	9	14	7⅞	5	1	15	8½	5	5	16	9	5	9	17	9
4	9⅛	14	8¼	5	1⅛	15	8⅞	5	5⅛	16	9⅜	5	9⅛	17	10
4	9¼	14	8¾	5	1¼	15	9¼	5	5¼	16	9⅞	5	9¼	17	10
4	9⅜	14	9⅛	5	1⅜	15	9⅝	5	5⅜	16	10¼	5	9⅜	17	10
4	9½	14	9½	5	1½	15	10	5	5½	16	10⅝	5	9½	17	11
4	9⅝	14	9⅞	5	1⅝	15	10⅜	5	5⅝	16	11	5	9⅝	17	11
4	9¾	14	10¼	5	1¾	15	10⅞	5	5¾	16	11⅜	5	9¾	18	0
4	9⅞	14	10⅝	5	1⅞	15	11¼	5	5⅞	16	11¾	5	9⅞	18	0

For Angle Iron measuring $\frac{1}{2}$ an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN
5	10	18	$0\frac{3}{4}$	6	2	19	$1\frac{3}{8}$	6	6	20	$1\frac{7}{8}$	6	10	21	$2\frac{1}{2}$
5	$10\frac{1}{8}$	18	$1\frac{1}{8}$	6	$2\frac{1}{8}$	19	$1\frac{3}{4}$	6	$6\frac{1}{8}$	20	$2\frac{1}{4}$	6	$10\frac{1}{8}$	21	$2\frac{7}{8}$
5	$10\frac{1}{4}$	18	$1\frac{1}{2}$	6	$2\frac{1}{4}$	19	$2\frac{1}{8}$	6	$6\frac{1}{4}$	20	$2\frac{5}{8}$	6	$10\frac{1}{4}$	21	$3\frac{1}{4}$
5	$10\frac{3}{8}$	18	$1\frac{7}{8}$	6	$2\frac{3}{8}$	19	$2\frac{1}{2}$	6	$6\frac{3}{8}$	20	3	6	$10\frac{3}{8}$	21	$3\frac{5}{8}$
5	$10\frac{1}{2}$	18	$2\frac{3}{8}$	6	$2\frac{1}{2}$	19	$2\frac{7}{8}$	6	$6\frac{1}{2}$	20	$3\frac{1}{2}$	6	$10\frac{1}{2}$	21	4
5	$10\frac{5}{8}$	18	$2\frac{1}{4}$	6	$2\frac{5}{8}$	19	$3\frac{1}{4}$	6	$6\frac{5}{8}$	20	$3\frac{7}{8}$	6	$10\frac{5}{8}$	21	$4\frac{3}{8}$
5	$10\frac{3}{4}$	18	$3\frac{1}{8}$	6	$2\frac{3}{4}$	19	$3\frac{5}{8}$	6	$6\frac{3}{4}$	20	$4\frac{1}{4}$	6	$10\frac{3}{4}$	21	$4\frac{3}{4}$
5	$10\frac{7}{8}$	18	$3\frac{1}{2}$	6	$2\frac{7}{8}$	19	4	6	$6\frac{7}{8}$	20	$4\frac{5}{8}$	6	$10\frac{7}{8}$	21	$5\frac{1}{8}$
5	11	18	$3\frac{7}{8}$	6	3	19	$4\frac{1}{8}$	6	7	20	5	6	11	21	$5\frac{1}{2}$
5	$11\frac{1}{8}$	18	$4\frac{1}{4}$	6	$3\frac{1}{8}$	19	$4\frac{7}{8}$	6	$7\frac{1}{8}$	20	$5\frac{3}{8}$	6	$11\frac{1}{8}$	21	6
5	$11\frac{1}{4}$	18	$4\frac{5}{8}$	6	$3\frac{1}{4}$	19	$5\frac{1}{4}$	6	$7\frac{1}{4}$	20	$5\frac{7}{8}$	6	$11\frac{1}{4}$	21	$6\frac{3}{8}$
5	$11\frac{3}{8}$	18	5	6	$3\frac{3}{8}$	19	$5\frac{5}{8}$	6	$7\frac{3}{8}$	20	$6\frac{1}{4}$	6	$11\frac{3}{8}$	21	$6\frac{3}{4}$
5	$11\frac{1}{2}$	18	$5\frac{1}{2}$	6	$3\frac{1}{2}$	19	6	6	$7\frac{1}{2}$	20	$6\frac{5}{8}$	6	$11\frac{1}{2}$	21	$7\frac{1}{8}$
5	$11\frac{5}{8}$	18	$5\frac{7}{8}$	6	$3\frac{5}{8}$	19	$6\frac{3}{8}$	6	$7\frac{5}{8}$	20	7	6	$11\frac{5}{8}$	21	$7\frac{5}{8}$
5	$11\frac{3}{4}$	18	$6\frac{1}{4}$	6	$3\frac{3}{4}$	19	$6\frac{7}{8}$	6	$7\frac{3}{4}$	20	$7\frac{3}{8}$	6	$11\frac{3}{4}$	21	8
5	$11\frac{7}{8}$	18	$6\frac{5}{8}$	6	$3\frac{7}{8}$	19	$7\frac{1}{4}$	6	$7\frac{7}{8}$	20	$7\frac{3}{4}$	6	$11\frac{7}{8}$	21	$8\frac{3}{8}$
6	0	18	7	6	4	19	$7\frac{5}{8}$	6	8	20	$8\frac{1}{8}$	7	0	21	$8\frac{3}{4}$
6	$0\frac{1}{8}$	18	$7\frac{3}{8}$	6	$4\frac{1}{8}$	19	8	6	$8\frac{1}{8}$	20	$8\frac{1}{2}$	7	$0\frac{1}{8}$	21	$9\frac{1}{8}$
6	$0\frac{1}{4}$	18	$7\frac{7}{8}$	6	$4\frac{1}{4}$	19	$8\frac{3}{8}$	6	$8\frac{1}{4}$	20	9	7	$0\frac{1}{4}$	21	$9\frac{1}{2}$
6	$0\frac{3}{8}$	18	$8\frac{1}{4}$	6	$4\frac{3}{8}$	19	$8\frac{1}{4}$	6	$8\frac{3}{8}$	20	$9\frac{3}{8}$	7	$0\frac{3}{8}$	21	$9\frac{7}{8}$
6	$0\frac{1}{2}$	18	$8\frac{5}{8}$	6	$4\frac{1}{2}$	19	$9\frac{1}{8}$	6	$8\frac{1}{2}$	20	$9\frac{3}{4}$	7	$0\frac{1}{2}$	21	$10\frac{3}{8}$
6	$0\frac{5}{8}$	18	9	6	$4\frac{5}{8}$	19	$9\frac{5}{8}$	6	$8\frac{5}{8}$	20	$10\frac{1}{8}$	7	$0\frac{5}{8}$	21	$10\frac{3}{4}$
6	$0\frac{3}{4}$	18	$9\frac{3}{8}$	6	$4\frac{3}{4}$	19	10	6	$8\frac{3}{4}$	20	$10\frac{1}{2}$	7	$0\frac{3}{4}$	21	$11\frac{1}{8}$
6	$0\frac{7}{8}$	18	$9\frac{3}{4}$	6	$4\frac{7}{8}$	19	$10\frac{3}{8}$	6	$8\frac{7}{8}$	20	$10\frac{7}{8}$	7	$0\frac{7}{8}$	21	$11\frac{1}{2}$
6	1	18	$10\frac{1}{8}$	6	5	19	$10\frac{3}{4}$	6	9	20	$11\frac{3}{8}$	7	1	21	$11\frac{7}{8}$
6	$1\frac{1}{8}$	18	$10\frac{1}{2}$	6	$5\frac{1}{8}$	19	$11\frac{1}{8}$	6	$9\frac{1}{8}$	20	$11\frac{3}{4}$	7	$1\frac{1}{8}$	22	$0\frac{1}{4}$
6	$1\frac{1}{4}$	18	11	6	$5\frac{1}{4}$	19	$11\frac{1}{2}$	6	$9\frac{1}{4}$	21	$0\frac{1}{8}$	7	$1\frac{1}{4}$	22	$0\frac{5}{8}$
6	$1\frac{3}{8}$	18	$11\frac{3}{8}$	6	$5\frac{3}{8}$	19	$11\frac{7}{8}$	6	$9\frac{3}{8}$	21	$0\frac{1}{2}$	7	$1\frac{3}{8}$	22	1
6	$1\frac{1}{2}$	18	$11\frac{3}{4}$	6	$5\frac{1}{2}$	20	$0\frac{3}{8}$	6	$9\frac{1}{2}$	21	$0\frac{7}{8}$	7	$1\frac{1}{2}$	22	$1\frac{1}{2}$
6	$1\frac{5}{8}$	19	$0\frac{1}{8}$	6	$5\frac{5}{8}$	20	$0\frac{3}{4}$	6	$9\frac{5}{8}$	21	$1\frac{1}{4}$	7	$1\frac{5}{8}$	22	$1\frac{7}{8}$
6	$1\frac{3}{4}$	19	$0\frac{1}{2}$	6	$5\frac{3}{4}$	20	$1\frac{1}{8}$	6	$9\frac{3}{4}$	21	$1\frac{5}{8}$	7	$1\frac{3}{4}$	22	$2\frac{1}{4}$
6	$1\frac{7}{8}$	19	$0\frac{7}{8}$	6	$5\frac{7}{8}$	20	$1\frac{1}{2}$	6	$9\frac{7}{8}$	21	2	7	$1\frac{7}{8}$	22	$2\frac{5}{8}$

For Angle Iron measuring ½ an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN
7	2	22	3	7	6	23	3 5/8	7	10	24	4 1/8	8	2	25	4 3/4
7	2 1/8	22	3 3/8	7	6 1/8	23	4	7	10 1/8	24	4 1/4	8	2 1/8	25	5 1/8
7	2 1/4	22	3 7/8	7	6 1/4	23	4 3/8	7	10 1/4	24	4 7/8	8	2 1/4	25	5 1/2
7	2 3/8	22	4 1/4	7	6 3/8	23	4 3/4	7	10 3/8	24	5 3/8	8	2 3/8	25	5 7/8
7	2 1/2	22	4 5/8	7	6 1/2	23	5 1/8	7	10 1/2	24	5 3/4	8	2 1/2	25	6 1/4
7	2 5/8	22	5	7	6 5/8	23	5 1/2	7	10 5/8	24	6 1/8	8	2 5/8	25	6 5/8
7	2 3/4	22	5 3/8	7	6 3/4	23	6	7	10 3/4	24	6 1/2	8	2 3/4	25	7
7	2 7/8	22	5 3/4	7	6 7/8	23	6 3/8	7	10 7/8	24	6 7/8	8	2 7/8	25	7 1/2
7	3	22	6 1/8	7	7	23	6 3/4	7	11	24	7 1/4	8	3	25	7 7/8
7	3 1/8	22	6 1/2	7	7 1/8	23	7 1/8	7	11 1/8	24	7 5/8	8	3 1/8	25	8 1/4
7	3 1/4	22	7	7	7 1/4	23	7 1/2	7	11 1/4	24	8	8	3 1/4	25	8 5/8
7	3 3/8	22	7 3/8	7	7 3/8	23	7 7/8	7	11 3/8	24	8 1/2	8	3 3/8	25	9
7	3 1/2	22	7 3/4	7	7 1/2	23	8 1/4	7	11 1/2	24	8 7/8	8	3 1/2	25	9 1/2
7	3 5/8	22	8 1/8	7	7 5/8	23	8 3/4	7	11 5/8	24	9 1/4	8	3 5/8	25	9 7/8
7	3 3/4	22	8 1/2	7	7 3/4	23	9 1/8	7	11 3/4	24	9 5/8	8	3 3/4	25	10 1/4
7	3 7/8	22	8 7/8	7	7 7/8	23	9 1/2	7	11 7/8	24	10	8	3 7/8	25	10 5/8
7	4	22	9 1/4	7	8	23	9 7/8	8	0	24	10 1/8	8	4	25	11
7	4 1/8	22	9 3/4	7	8 1/8	23	10 1/4	8	0 1/8	24	10 7/8	8	4 1/8	25	11 3/8
7	4 1/4	22	10 1/8	7	8 1/4	23	10 5/8	8	0 1/4	24	11 1/4	8	4 1/4	25	11 3/4
7	4 3/8	22	10 1/2	7	8 3/8	23	11	8	0 3/8	24	11 5/8	8	4 3/8	26	0 1/8
7	4 1/2	22	10 7/8	7	8 1/2	23	11 1/2	8	0 1/2	25	0	8	4 1/2	26	0 5/8
7	4 5/8	22	11 1/4	7	8 5/8	23	11 7/8	8	0 5/8	25	0 3/8	8	4 5/8	26	1
7	4 3/4	22	11 5/8	7	8 3/4	24	0 1/4	8	0 3/4	25	0 7/8	8	4 3/4	26	1 3/8
7	4 7/8	23	0	7	8 7/8	24	0 5/8	8	0 7/8	25	1 1/4	8	4 7/8	26	1 3/4
7	5	23	0 1/2	7	9	24	1	8	1	25	1 5/8	8	5	26	2 1/8
7	5 1/8	23	0 7/8	7	9 1/8	24	1 3/8	8	1 1/8	25	2	8	5 1/8	26	2 1/2
7	5 1/4	23	1 1/4	7	9 1/4	24	1 3/4	8	1 1/4	25	2 3/8	8	5 1/4	26	2 7/8
7	5 3/8	23	1 5/8	7	9 3/8	24	2 1/4	8	1 3/8	25	2 3/4	8	5 3/8	26	3 3/8
7	5 1/2	23	2	7	9 1/2	24	2 5/8	8	1 1/2	25	3 1/8	8	5 1/2	26	3 3/4
7	5 5/8	23	2 3/8	7	9 5/8	24	3	8	1 5/8	25	3 1/2	8	5 5/8	26	4 1/8
7	5 3/4	23	2 3/4	7	9 3/4	24	3 3/8	8	1 3/4	25	3 7/8	8	5 3/4	26	4 1/2
7	5 7/8	23	3 1/4	7	9 7/8	24	3 3/4	8	1 7/8	25	4 3/8	8	5 7/8	26	4 7/8

TABLE XIII.

For Angle Iron measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
0	6	1	$2\frac{7}{8}$	0	10	2	$3\frac{1}{2}$	1	2	3	4	1	6	4	$4\frac{1}{2}$
0	$6\frac{1}{8}$	1	$3\frac{1}{4}$	0	$10\frac{1}{8}$	2	$3\frac{7}{8}$	1	$2\frac{1}{8}$	3	$4\frac{3}{8}$	1	$6\frac{1}{8}$	4	5
0	$6\frac{1}{4}$	1	$3\frac{5}{8}$	0	$10\frac{1}{4}$	2	$4\frac{1}{4}$	1	$2\frac{1}{4}$	3	$4\frac{7}{8}$	1	$6\frac{1}{4}$	4	$5\frac{3}{8}$
0	$6\frac{3}{8}$	1	4	0	$10\frac{3}{8}$	2	$4\frac{5}{8}$	1	$2\frac{3}{8}$	3	$5\frac{1}{4}$	1	$6\frac{3}{8}$	4	$5\frac{3}{4}$
0	$6\frac{1}{2}$	1	$4\frac{1}{2}$	0	$10\frac{1}{2}$	2	5	1	$2\frac{1}{2}$	3	$5\frac{5}{8}$	1	$6\frac{1}{2}$	4	$6\frac{1}{8}$
0	$6\frac{5}{8}$	1	$4\frac{7}{8}$	0	$10\frac{5}{8}$	2	$5\frac{1}{2}$	1	$2\frac{5}{8}$	3	6	1	$6\frac{5}{8}$	4	$6\frac{1}{2}$
0	$6\frac{3}{4}$	1	$5\frac{1}{4}$	0	$10\frac{3}{4}$	2	$5\frac{7}{8}$	1	$2\frac{3}{4}$	3	$6\frac{3}{8}$	1	$6\frac{3}{4}$	4	7
0	$6\frac{7}{8}$	1	$5\frac{5}{8}$	0	$10\frac{7}{8}$	2	$6\frac{1}{4}$	1	$2\frac{7}{8}$	3	$6\frac{3}{4}$	1	$6\frac{7}{8}$	4	$7\frac{3}{8}$
0	7	1	6	0	11	2	$6\frac{5}{8}$	1	3	3	$7\frac{1}{8}$	1	7	4	$7\frac{3}{4}$
0	$7\frac{1}{8}$	1	$6\frac{1}{2}$	0	$11\frac{1}{8}$	2	7	1	$3\frac{1}{8}$	3	$7\frac{5}{8}$	1	$7\frac{1}{8}$	4	$8\frac{1}{8}$
0	$7\frac{1}{4}$	1	$6\frac{7}{8}$	0	$11\frac{1}{4}$	2	$7\frac{3}{8}$	1	$3\frac{1}{4}$	3	8	1	$7\frac{1}{4}$	4	$8\frac{1}{3}$
0	$7\frac{3}{8}$	1	$7\frac{1}{4}$	0	$11\frac{3}{8}$	2	$7\frac{3}{4}$	1	$3\frac{3}{8}$	3	$8\frac{3}{8}$	1	$7\frac{3}{8}$	4	$8\frac{7}{8}$
0	$7\frac{1}{2}$	1	$7\frac{5}{8}$	0	$11\frac{1}{2}$	2	$8\frac{1}{4}$	1	$3\frac{1}{2}$	3	$8\frac{3}{4}$	1	$7\frac{1}{2}$	4	$9\frac{1}{4}$
0	$7\frac{5}{8}$	1	8	0	$11\frac{5}{8}$	2	$8\frac{5}{8}$	1	$3\frac{5}{8}$	3	$9\frac{1}{8}$	1	$7\frac{5}{8}$	4	$9\frac{5}{8}$
0	$7\frac{3}{4}$	1	$8\frac{3}{8}$	0	$11\frac{3}{4}$	2	9	1	$3\frac{3}{4}$	3	$9\frac{1}{2}$	1	$7\frac{3}{4}$	4	10
0	$7\frac{7}{8}$	1	$8\frac{3}{4}$	0	$11\frac{7}{8}$	2	$9\frac{3}{8}$	1	$3\frac{7}{8}$	3	$9\frac{7}{8}$	1	$7\frac{7}{8}$	4	$10\frac{1}{2}$
0	8	1	$9\frac{1}{8}$	1	0	2	$9\frac{3}{4}$	1	4	3	$10\frac{3}{8}$	1	8	4	$10\frac{7}{8}$
0	$8\frac{1}{8}$	1	$9\frac{1}{2}$	1	$0\frac{1}{8}$	2	$10\frac{1}{8}$	1	$4\frac{1}{8}$	3	$10\frac{3}{4}$	1	$8\frac{1}{8}$	4	$11\frac{1}{4}$
0	$8\frac{1}{4}$	1	10	1	$0\frac{1}{4}$	2	$10\frac{1}{2}$	1	$4\frac{1}{4}$	3	$11\frac{1}{8}$	1	$8\frac{1}{4}$	4	$11\frac{5}{8}$
0	$8\frac{3}{8}$	1	$10\frac{3}{8}$	1	$0\frac{3}{8}$	2	$10\frac{7}{8}$	1	$4\frac{3}{8}$	3	$11\frac{1}{2}$	1	$8\frac{3}{8}$	5	0
0	$8\frac{1}{2}$	1	$10\frac{3}{4}$	1	$0\frac{1}{2}$	2	$11\frac{3}{8}$	1	$4\frac{1}{2}$	3	$11\frac{7}{8}$	1	$8\frac{1}{2}$	5	$0\frac{3}{8}$
0	$8\frac{5}{8}$	1	$11\frac{1}{8}$	1	$0\frac{5}{8}$	2	$11\frac{3}{4}$	1	$4\frac{5}{8}$	4	$0\frac{1}{4}$	1	$8\frac{5}{8}$	5	$0\frac{7}{8}$
0	$8\frac{3}{4}$	1	$11\frac{1}{2}$	1	$0\frac{3}{4}$	3	$0\frac{1}{8}$	1	$4\frac{3}{4}$	4	$0\frac{5}{8}$	1	$8\frac{3}{4}$	5	$1\frac{1}{4}$
0	$8\frac{7}{8}$	1	$11\frac{7}{8}$	1	$0\frac{7}{8}$	3	$0\frac{1}{2}$	1	$4\frac{7}{8}$	4	1	1	$8\frac{7}{8}$	5	$1\frac{5}{8}$
0	9	2	$0\frac{3}{8}$	1	1	3	$0\frac{7}{8}$	1	5	4	$1\frac{3}{8}$	1	9	5	2
0	$9\frac{1}{8}$	2	$0\frac{3}{4}$	1	$1\frac{1}{8}$	3	$1\frac{1}{4}$	1	$5\frac{1}{8}$	4	$1\frac{7}{8}$	1	$9\frac{1}{8}$	5	$2\frac{3}{8}$
0	$9\frac{1}{4}$	2	$1\frac{1}{8}$	1	$1\frac{1}{4}$	3	$1\frac{5}{8}$	1	$5\frac{1}{4}$	4	$2\frac{1}{4}$	1	$9\frac{1}{4}$	5	$2\frac{3}{4}$
0	$9\frac{3}{8}$	2	$1\frac{1}{2}$	1	$1\frac{3}{8}$	3	2	1	$5\frac{3}{8}$	4	$2\frac{5}{8}$	1	$9\frac{3}{8}$	5	$3\frac{1}{8}$
0	$9\frac{1}{2}$	2	$1\frac{7}{8}$	1	$1\frac{1}{2}$	3	$2\frac{1}{2}$	1	$5\frac{1}{2}$	4	3	1	$9\frac{1}{2}$	5	$3\frac{3}{8}$
0	$9\frac{5}{8}$	2	$2\frac{3}{8}$	1	$1\frac{5}{8}$	3	$2\frac{7}{8}$	1	$5\frac{5}{8}$	4	$3\frac{3}{8}$	1	$9\frac{5}{8}$	5	4
0	$9\frac{3}{4}$	2	$2\frac{3}{4}$	1	$1\frac{3}{4}$	3	$3\frac{1}{4}$	1	$5\frac{3}{4}$	4	$3\frac{3}{4}$	1	$9\frac{3}{4}$	5	$4\frac{3}{8}$
0	$9\frac{7}{8}$	2	$3\frac{1}{8}$	1	$1\frac{7}{8}$	3	$3\frac{5}{8}$	1	$5\frac{7}{8}$	4	$4\frac{1}{8}$	1	$9\frac{7}{8}$	5	$4\frac{3}{4}$

For Angle Iron measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
1	10	5	$5\frac{1}{8}$	2	2	6	$5\frac{3}{4}$	2	6	7	$6\frac{1}{4}$	2	10	8	$6\frac{7}{8}$
1	$10\frac{1}{8}$	5	$5\frac{1}{4}$	2	$2\frac{1}{8}$	6	$6\frac{1}{8}$	2	$6\frac{1}{8}$	7	$6\frac{5}{8}$	2	$10\frac{1}{8}$	8	$7\frac{1}{4}$
1	$10\frac{1}{4}$	5	$5\frac{7}{8}$	2	$2\frac{1}{4}$	6	$6\frac{1}{2}$	2	$6\frac{1}{4}$	7	7	2	$10\frac{1}{4}$	8	$7\frac{5}{8}$
1	$10\frac{3}{8}$	5	$6\frac{3}{8}$	2	$2\frac{3}{8}$	6	$6\frac{7}{8}$	2	$6\frac{3}{8}$	7	$7\frac{1}{8}$	2	$10\frac{3}{8}$	8	8
1	$10\frac{1}{2}$	5	$6\frac{3}{4}$	2	$2\frac{1}{2}$	6	$7\frac{1}{4}$	2	$6\frac{1}{2}$	7	$7\frac{7}{8}$	2	$10\frac{1}{2}$	8	$8\frac{3}{8}$
1	$10\frac{5}{8}$	5	$7\frac{1}{8}$	2	$2\frac{5}{8}$	6	$7\frac{5}{8}$	2	$6\frac{5}{8}$	7	$8\frac{1}{4}$	2	$10\frac{5}{8}$	8	$8\frac{7}{8}$
1	$10\frac{3}{4}$	5	$7\frac{1}{2}$	2	$2\frac{3}{4}$	6	$8\frac{1}{8}$	2	$6\frac{3}{4}$	7	$8\frac{5}{8}$	2	$10\frac{3}{4}$	8	$9\frac{1}{4}$
1	$10\frac{7}{8}$	5	8	2	$2\frac{7}{8}$	6	$8\frac{1}{2}$	2	$6\frac{7}{8}$	7	9	2	$10\frac{7}{8}$	8	$9\frac{5}{8}$
1	11	5	$8\frac{3}{8}$	2	3	6	$8\frac{7}{8}$	2	7	7	$9\frac{3}{8}$	2	11	8	10
1	$11\frac{1}{8}$	5	$8\frac{3}{4}$	2	$3\frac{1}{8}$	6	$9\frac{1}{4}$	2	$7\frac{1}{8}$	7	$9\frac{3}{4}$	2	$11\frac{1}{8}$	8	$10\frac{3}{8}$
1	$11\frac{1}{4}$	5	$9\frac{1}{8}$	2	$3\frac{1}{4}$	6	$9\frac{5}{8}$	2	$7\frac{1}{4}$	7	$10\frac{1}{4}$	2	$11\frac{1}{4}$	8	$10\frac{3}{4}$
1	$11\frac{3}{8}$	5	$9\frac{1}{2}$	2	$3\frac{3}{8}$	6	10	2	$7\frac{3}{8}$	7	$10\frac{5}{8}$	2	$11\frac{3}{8}$	8	$11\frac{1}{8}$
1	$11\frac{1}{2}$	5	$9\frac{7}{8}$	2	$3\frac{1}{2}$	6	$10\frac{1}{2}$	2	$7\frac{1}{2}$	7	11	2	$11\frac{1}{2}$	8	$11\frac{1}{2}$
1	$11\frac{5}{8}$	5	$10\frac{1}{4}$	2	$3\frac{5}{8}$	6	$10\frac{7}{8}$	2	$7\frac{5}{8}$	7	$11\frac{3}{8}$	2	$11\frac{5}{8}$	9	0
1	$11\frac{3}{4}$	5	$10\frac{5}{8}$	2	$3\frac{3}{4}$	6	$11\frac{1}{4}$	2	$7\frac{3}{4}$	7	$11\frac{3}{4}$	2	$11\frac{3}{4}$	9	$0\frac{3}{8}$
1	$11\frac{7}{8}$	5	11	2	$3\frac{7}{8}$	6	$11\frac{5}{8}$	2	$7\frac{7}{8}$	8	$0\frac{1}{8}$	2	$11\frac{7}{8}$	9	$0\frac{3}{4}$
2	0	5	$11\frac{1}{2}$	2	4	7	0	2	8	8	$0\frac{1}{2}$	3	0	9	$1\frac{1}{8}$
2	$0\frac{1}{8}$	5	$11\frac{7}{8}$	2	$4\frac{1}{8}$	7	$0\frac{3}{8}$	2	$8\frac{1}{8}$	8	1	3	$0\frac{1}{8}$	9	$1\frac{1}{2}$
2	$0\frac{1}{4}$	6	$0\frac{1}{4}$	2	$4\frac{1}{4}$	7	$0\frac{3}{4}$	2	$8\frac{1}{4}$	8	$1\frac{3}{8}$	3	$0\frac{1}{4}$	9	$1\frac{7}{8}$
2	$0\frac{3}{8}$	6	$0\frac{5}{8}$	2	$4\frac{3}{8}$	7	$1\frac{1}{8}$	2	$8\frac{3}{8}$	8	$1\frac{3}{4}$	3	$0\frac{3}{8}$	9	$2\frac{3}{8}$
2	$0\frac{1}{2}$	6	1	2	$4\frac{1}{2}$	7	$1\frac{1}{2}$	2	$8\frac{1}{2}$	8	$2\frac{1}{8}$	3	$0\frac{1}{2}$	9	$2\frac{3}{4}$
2	$0\frac{5}{8}$	6	$1\frac{3}{8}$	2	$4\frac{5}{8}$	7	2	2	$8\frac{5}{8}$	8	$2\frac{1}{2}$	3	$0\frac{5}{8}$	9	$3\frac{1}{8}$
2	$0\frac{3}{4}$	6	$1\frac{3}{4}$	2	$4\frac{3}{4}$	7	$2\frac{3}{8}$	2	$8\frac{3}{4}$	8	$2\frac{7}{8}$	3	$0\frac{3}{4}$	9	$3\frac{1}{2}$
2	$0\frac{7}{8}$	6	$2\frac{1}{4}$	2	$4\frac{7}{8}$	7	$2\frac{3}{4}$	2	$8\frac{7}{8}$	8	$3\frac{3}{8}$	3	$0\frac{7}{8}$	9	$3\frac{7}{8}$
2	1	6	$2\frac{5}{8}$	2	5	7	$3\frac{1}{8}$	2	9	8	$3\frac{3}{4}$	3	1	9	$4\frac{1}{4}$
2	$1\frac{1}{8}$	6	3	2	$5\frac{1}{8}$	7	$3\frac{1}{2}$	2	$9\frac{1}{8}$	8	$4\frac{1}{8}$	3	$1\frac{1}{8}$	9	$4\frac{5}{8}$
2	$1\frac{1}{4}$	6	$3\frac{3}{8}$	2	$5\frac{1}{4}$	7	$3\frac{7}{8}$	2	$9\frac{1}{4}$	8	$4\frac{1}{2}$	3	$1\frac{1}{4}$	9	5
2	$1\frac{3}{8}$	6	$3\frac{3}{4}$	2	$5\frac{3}{8}$	7	$4\frac{3}{8}$	2	$9\frac{3}{8}$	8	$4\frac{7}{8}$	3	$1\frac{3}{8}$	9	$5\frac{1}{2}$
2	$1\frac{1}{2}$	6	$4\frac{1}{8}$	2	$5\frac{1}{2}$	7	$4\frac{3}{4}$	2	$9\frac{1}{2}$	8	$5\frac{1}{4}$	3	$1\frac{1}{2}$	9	$5\frac{7}{8}$
2	$1\frac{5}{8}$	6	$4\frac{1}{2}$	2	$5\frac{5}{8}$	7	$5\frac{1}{8}$	2	$9\frac{5}{8}$	8	$5\frac{5}{8}$	3	$1\frac{5}{8}$	9	$6\frac{1}{4}$
2	$1\frac{3}{4}$	6	$4\frac{7}{8}$	2	$5\frac{3}{4}$	7	$5\frac{1}{2}$	2	$9\frac{3}{4}$	8	6	3	$1\frac{3}{4}$	9	$6\frac{5}{8}$
2	$1\frac{7}{8}$	6	$5\frac{3}{8}$	2	$5\frac{7}{8}$	7	$5\frac{7}{8}$	2	$9\frac{7}{8}$	8	$6\frac{1}{2}$	3	$1\frac{7}{8}$	9	7

For Angle Iron measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
3	2	9	$7\frac{3}{8}$	3	6	10	8	3	10	11	$8\frac{1}{8}$	4	2	12	$9\frac{1}{8}$
3	$2\frac{1}{8}$	9	$7\frac{7}{8}$	3	$6\frac{1}{8}$	10	$8\frac{3}{8}$	3	$10\frac{1}{8}$	11	$8\frac{7}{8}$	4	$2\frac{1}{8}$	12	$9\frac{1}{4}$
3	$2\frac{1}{4}$	9	$8\frac{1}{4}$	3	$6\frac{1}{4}$	10	$8\frac{3}{4}$	3	$10\frac{1}{4}$	11	$9\frac{3}{8}$	4	$2\frac{1}{4}$	12	$9\frac{7}{8}$
3	$2\frac{3}{8}$	9	$8\frac{5}{8}$	3	$6\frac{3}{8}$	10	$9\frac{1}{8}$	3	$10\frac{3}{8}$	11	$9\frac{3}{4}$	4	$2\frac{3}{8}$	12	$10\frac{3}{8}$
3	$2\frac{1}{2}$	9	9	3	$6\frac{1}{2}$	10	$9\frac{1}{2}$	3	$10\frac{1}{2}$	11	$10\frac{1}{8}$	4	$2\frac{1}{2}$	12	$10\frac{3}{4}$
3	$2\frac{5}{8}$	9	$9\frac{3}{8}$	3	$6\frac{5}{8}$	10	$9\frac{7}{8}$	3	$10\frac{5}{8}$	11	$10\frac{1}{2}$	4	$2\frac{5}{8}$	12	$11\frac{1}{8}$
3	$2\frac{3}{4}$	9	$9\frac{3}{4}$	3	$6\frac{3}{4}$	10	$10\frac{3}{8}$	3	$10\frac{3}{4}$	11	$10\frac{7}{8}$	4	$2\frac{3}{4}$	12	$11\frac{1}{2}$
3	$2\frac{7}{8}$	9	$10\frac{1}{8}$	3	$6\frac{7}{8}$	10	$10\frac{1}{4}$	3	$10\frac{7}{8}$	11	$11\frac{1}{4}$	4	$2\frac{7}{8}$	12	$11\frac{7}{8}$
3	3	9	$10\frac{1}{2}$	3	7	10	$11\frac{1}{8}$	3	11	11	$11\frac{5}{8}$	4	3	13	$0\frac{1}{4}$
3	$3\frac{1}{8}$	9	$10\frac{7}{8}$	3	$7\frac{1}{8}$	10	$11\frac{1}{2}$	3	$11\frac{1}{8}$	12	$0\frac{1}{8}$	4	$3\frac{1}{8}$	13	$0\frac{5}{8}$
3	$3\frac{1}{4}$	9	$11\frac{3}{8}$	3	$7\frac{1}{4}$	10	$11\frac{7}{8}$	3	$11\frac{1}{4}$	12	$0\frac{1}{2}$	4	$3\frac{1}{4}$	13	1
3	$3\frac{3}{8}$	9	$11\frac{3}{4}$	3	$7\frac{3}{8}$	11	$0\frac{3}{8}$	3	$11\frac{3}{8}$	12	$0\frac{7}{8}$	4	$3\frac{3}{8}$	13	$1\frac{1}{8}$
3	$3\frac{1}{2}$	10	$0\frac{1}{8}$	3	$7\frac{1}{2}$	11	$0\frac{3}{4}$	3	$11\frac{1}{2}$	12	$1\frac{1}{4}$	4	$3\frac{1}{2}$	13	$1\frac{7}{8}$
3	$3\frac{5}{8}$	10	$0\frac{1}{2}$	3	$7\frac{5}{8}$	11	$1\frac{1}{8}$	3	$11\frac{5}{8}$	12	$1\frac{5}{8}$	4	$3\frac{5}{8}$	13	$2\frac{1}{4}$
3	$3\frac{3}{4}$	10	$0\frac{7}{8}$	3	$7\frac{3}{4}$	11	$1\frac{1}{2}$	3	$11\frac{3}{4}$	12	2	4	$3\frac{3}{4}$	13	$2\frac{5}{8}$
3	$3\frac{7}{8}$	10	$1\frac{3}{8}$	3	$7\frac{7}{8}$	11	$1\frac{7}{8}$	3	$11\frac{7}{8}$	12	$2\frac{3}{8}$	4	$3\frac{7}{8}$	13	3
3	4	10	$1\frac{3}{4}$	3	8	11	$2\frac{1}{8}$	4	0	12	$2\frac{7}{8}$	4	4	13	$3\frac{3}{8}$
3	$4\frac{1}{8}$	10	$2\frac{1}{8}$	3	$8\frac{1}{8}$	11	$2\frac{5}{8}$	4	$0\frac{1}{8}$	12	$3\frac{1}{4}$	4	$4\frac{1}{8}$	13	$3\frac{3}{4}$
3	$4\frac{1}{4}$	10	$2\frac{1}{2}$	3	$8\frac{1}{4}$	11	3	4	$0\frac{1}{4}$	12	$3\frac{5}{8}$	4	$4\frac{1}{4}$	13	$4\frac{1}{4}$
3	$4\frac{3}{8}$	10	$2\frac{7}{8}$	3	$8\frac{3}{8}$	11	$3\frac{1}{2}$	4	$0\frac{3}{8}$	12	4	4	$4\frac{3}{8}$	13	$4\frac{5}{8}$
3	$4\frac{1}{2}$	10	$3\frac{1}{4}$	3	$8\frac{1}{2}$	11	$3\frac{7}{8}$	4	$0\frac{1}{2}$	12	$4\frac{3}{8}$	4	$4\frac{1}{2}$	13	5
3	$4\frac{5}{8}$	10	$3\frac{5}{8}$	3	$8\frac{5}{8}$	11	$4\frac{1}{4}$	4	$0\frac{5}{8}$	12	$4\frac{3}{4}$	4	$4\frac{5}{8}$	13	$5\frac{3}{8}$
3	$4\frac{3}{4}$	10	4	3	$8\frac{3}{4}$	11	$4\frac{5}{8}$	4	$0\frac{3}{4}$	12	$5\frac{1}{4}$	4	$4\frac{3}{4}$	13	$5\frac{3}{4}$
3	$4\frac{7}{8}$	10	$4\frac{1}{2}$	3	$8\frac{7}{8}$	11	5	4	$0\frac{7}{8}$	12	$5\frac{5}{8}$	4	$4\frac{7}{8}$	13	$6\frac{1}{8}$
3	5	10	$4\frac{7}{8}$	3	9	11	$5\frac{3}{8}$	4	1	12	6	4	5	13	$6\frac{1}{2}$
3	$5\frac{1}{8}$	10	$5\frac{1}{4}$	3	$9\frac{1}{8}$	11	$5\frac{3}{4}$	4	$1\frac{1}{8}$	12	$6\frac{3}{8}$	4	$5\frac{1}{8}$	13	7
3	$5\frac{1}{4}$	10	$5\frac{5}{8}$	3	$9\frac{1}{4}$	11	$6\frac{1}{4}$	4	$1\frac{1}{4}$	12	$6\frac{3}{4}$	4	$5\frac{1}{4}$	13	$7\frac{3}{8}$
3	$5\frac{3}{8}$	10	6	3	$9\frac{3}{8}$	11	$6\frac{5}{8}$	4	$1\frac{3}{8}$	12	$7\frac{1}{8}$	4	$5\frac{3}{8}$	13	$7\frac{3}{4}$
3	$5\frac{1}{2}$	10	$6\frac{3}{8}$	3	$9\frac{1}{2}$	11	7	4	$1\frac{1}{2}$	12	$7\frac{1}{2}$	4	$5\frac{1}{2}$	13	$8\frac{1}{8}$
3	$5\frac{5}{8}$	10	$6\frac{7}{8}$	3	$9\frac{5}{8}$	11	$7\frac{3}{8}$	4	$1\frac{5}{8}$	12	$7\frac{7}{8}$	4	$5\frac{5}{8}$	13	$8\frac{1}{2}$
3	$5\frac{3}{4}$	10	$7\frac{1}{4}$	3	$9\frac{3}{4}$	11	$7\frac{3}{4}$	4	$1\frac{3}{4}$	12	$8\frac{3}{8}$	4	$5\frac{3}{4}$	13	$8\frac{7}{8}$
3	$5\frac{7}{8}$	10	$7\frac{5}{8}$	3	$9\frac{7}{8}$	11	$8\frac{1}{8}$	4	$1\frac{7}{8}$	12	$8\frac{3}{4}$	4	$5\frac{7}{8}$	13	$9\frac{1}{4}$

For ANGLE IRON measuring $\frac{5}{8}$ of an Inch thick, diagonally across the r

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRE FOR RING
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.
4	6	13	$9\frac{5}{8}$	4	10	14	$10\frac{1}{4}$	5	2	15	$10\frac{7}{8}$	5	6	16
4	$6\frac{1}{8}$	13	$10\frac{1}{8}$	4	$10\frac{1}{8}$	14	$10\frac{5}{8}$	5	$2\frac{1}{8}$	15	$11\frac{1}{4}$	5	$6\frac{1}{8}$	16
4	$6\frac{1}{4}$	13	$10\frac{1}{2}$	4	$10\frac{1}{4}$	14	11	5	$2\frac{1}{4}$	15	$11\frac{5}{8}$	5	$6\frac{1}{4}$	17
4	$6\frac{3}{8}$	13	$10\frac{7}{8}$	4	$10\frac{3}{8}$	14	$11\frac{1}{8}$	5	$2\frac{3}{8}$	16	0	5	$6\frac{3}{8}$	17
4	$6\frac{1}{2}$	13	$11\frac{1}{4}$	4	$10\frac{1}{2}$	14	$11\frac{7}{8}$	5	$2\frac{1}{2}$	16	$0\frac{3}{8}$	5	$6\frac{1}{2}$	17
4	$6\frac{5}{8}$	13	$11\frac{5}{8}$	4	$10\frac{5}{8}$	15	$0\frac{1}{4}$	5	$2\frac{5}{8}$	16	$0\frac{3}{4}$	5	$6\frac{5}{8}$	17
4	$6\frac{3}{4}$	14	0	4	$10\frac{3}{4}$	15	$0\frac{5}{8}$	5	$2\frac{3}{4}$	16	$1\frac{1}{8}$	5	$6\frac{3}{4}$	17
4	$6\frac{7}{8}$	14	$0\frac{3}{8}$	4	$10\frac{7}{8}$	15	1	5	$2\frac{7}{8}$	16	$1\frac{5}{8}$	5	$6\frac{7}{8}$	17
4	7	14	$0\frac{7}{8}$	4	11	15	$1\frac{3}{8}$	5	8	16	2	5	7	17
4	$7\frac{1}{8}$	14	$1\frac{1}{4}$	4	$11\frac{1}{8}$	15	$1\frac{7}{8}$	5	$3\frac{1}{8}$	16	$2\frac{3}{8}$	5	$7\frac{1}{8}$	17
4	$7\frac{1}{4}$	14	$1\frac{5}{8}$	4	$11\frac{1}{4}$	15	$2\frac{1}{4}$	5	$3\frac{1}{4}$	16	$2\frac{3}{4}$	5	$7\frac{1}{4}$	17
4	$7\frac{3}{8}$	14	2	4	$11\frac{3}{8}$	15	$2\frac{5}{8}$	5	$3\frac{3}{8}$	16	$3\frac{1}{8}$	5	$7\frac{3}{8}$	17
4	$7\frac{1}{2}$	14	$2\frac{3}{8}$	4	$11\frac{1}{2}$	15	3	5	$3\frac{1}{2}$	16	$3\frac{1}{2}$	5	$7\frac{1}{2}$	17
4	$7\frac{5}{8}$	14	$2\frac{3}{4}$	4	$11\frac{5}{8}$	15	$3\frac{3}{8}$	5	$3\frac{5}{8}$	16	$3\frac{7}{8}$	5	$7\frac{5}{8}$	17
4	$7\frac{3}{4}$	14	$3\frac{1}{8}$	4	$11\frac{3}{4}$	15	$3\frac{3}{4}$	5	$3\frac{3}{4}$	16	$4\frac{3}{8}$	5	$7\frac{3}{4}$	17
4	$7\frac{7}{8}$	14	$3\frac{1}{2}$	4	$11\frac{7}{8}$	15	$4\frac{1}{8}$	5	$3\frac{7}{8}$	16	$4\frac{3}{4}$	5	$7\frac{7}{8}$	17
4	8	14	4	5	0	15	$4\frac{1}{2}$	5	4	16	$5\frac{1}{8}$	5	8	17
4	$8\frac{1}{8}$	14	$4\frac{3}{8}$	5	$0\frac{1}{8}$	15	$4\frac{7}{8}$	5	$4\frac{1}{8}$	16	$5\frac{1}{2}$	5	$8\frac{1}{8}$	17
4	$8\frac{1}{4}$	14	$4\frac{3}{4}$	5	$0\frac{1}{4}$	15	$5\frac{3}{8}$	5	$4\frac{1}{4}$	16	$5\frac{7}{8}$	5	$8\frac{1}{4}$	17
4	$8\frac{3}{8}$	14	$5\frac{1}{8}$	5	$0\frac{3}{8}$	15	$5\frac{3}{4}$	5	$4\frac{3}{8}$	16	$6\frac{1}{4}$	5	$8\frac{3}{8}$	17
4	$8\frac{1}{2}$	14	$5\frac{1}{2}$	5	$0\frac{1}{2}$	15	$6\frac{1}{8}$	5	$4\frac{1}{2}$	16	$6\frac{5}{8}$	5	$8\frac{1}{2}$	17
4	$8\frac{5}{8}$	14	$5\frac{7}{8}$	5	$0\frac{5}{8}$	15	$6\frac{1}{2}$	5	$4\frac{5}{8}$	16	7	5	$8\frac{5}{8}$	17
4	$8\frac{3}{4}$	14	$6\frac{3}{8}$	5	$0\frac{3}{4}$	15	$6\frac{7}{8}$	5	$4\frac{3}{4}$	16	$7\frac{1}{2}$	5	$8\frac{3}{4}$	17
4	$8\frac{7}{8}$	14	$6\frac{3}{4}$	5	$0\frac{7}{8}$	15	$7\frac{1}{4}$	5	$4\frac{7}{8}$	16	$7\frac{7}{8}$	5	$8\frac{7}{8}$	17
4	9	14	$7\frac{1}{8}$	5	1	15	$7\frac{3}{4}$	5	5	16	$8\frac{1}{4}$	5	9	17
4	$9\frac{1}{8}$	14	$7\frac{1}{2}$	5	$1\frac{1}{8}$	15	$8\frac{1}{8}$	5	$5\frac{1}{8}$	16	$8\frac{5}{8}$	5	$9\frac{1}{8}$	17
4	$9\frac{1}{4}$	14	$7\frac{7}{8}$	5	$1\frac{1}{4}$	15	$8\frac{1}{2}$	5	$5\frac{1}{4}$	16	9	5	$9\frac{1}{4}$	17
4	$9\frac{3}{8}$	14	$8\frac{1}{4}$	5	$1\frac{3}{8}$	15	$8\frac{7}{8}$	5	$5\frac{3}{8}$	16	$9\frac{3}{8}$	5	$9\frac{3}{8}$	17
4	$9\frac{1}{2}$	14	$8\frac{3}{4}$	5	$1\frac{1}{2}$	15	$9\frac{1}{4}$	5	$5\frac{1}{2}$	16	$9\frac{7}{8}$	5	$9\frac{1}{2}$	17
4	$9\frac{5}{8}$	14	$9\frac{1}{8}$	5	$1\frac{5}{8}$	15	$9\frac{5}{8}$	5	$5\frac{5}{8}$	16	$10\frac{1}{4}$	5	$9\frac{5}{8}$	17
4	$9\frac{3}{4}$	14	$9\frac{1}{2}$	5	$1\frac{3}{4}$	15	10	5	$5\frac{3}{4}$	16	$10\frac{5}{8}$	5	$9\frac{3}{4}$	17
4	$9\frac{7}{8}$	14	$9\frac{7}{8}$	5	$1\frac{7}{8}$	15	$10\frac{3}{8}$	5	$5\frac{7}{8}$	16	11	5	$9\frac{7}{8}$	17

For ANGLE IRON measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN
5	10	18	0	6	2	19	$0\frac{1}{2}$	6	6	20	$1\frac{1}{8}$	6	10	21	$1\frac{5}{8}$
5	$10\frac{1}{8}$	18	$0\frac{3}{8}$	6	$2\frac{1}{8}$	19	$0\frac{7}{8}$	6	$6\frac{1}{8}$	20	$1\frac{1}{2}$	6	$10\frac{1}{8}$	21	2
5	$10\frac{1}{4}$	18	$0\frac{3}{4}$	6	$2\frac{1}{4}$	19	$1\frac{3}{8}$	6	$6\frac{1}{4}$	20	$1\frac{7}{8}$	6	$10\frac{1}{4}$	21	$2\frac{1}{8}$
5	$10\frac{3}{8}$	18	$1\frac{1}{8}$	6	$2\frac{3}{8}$	19	$1\frac{3}{4}$	6	$6\frac{3}{8}$	20	$2\frac{1}{4}$	6	$10\frac{3}{8}$	21	$2\frac{7}{8}$
5	$10\frac{1}{2}$	18	$1\frac{1}{2}$	6	$2\frac{1}{2}$	19	$2\frac{1}{8}$	6	$6\frac{1}{2}$	20	$2\frac{5}{8}$	6	$10\frac{1}{2}$	21	$3\frac{1}{4}$
5	$10\frac{5}{8}$	18	$1\frac{7}{8}$	6	$2\frac{5}{8}$	19	$2\frac{1}{2}$	6	$6\frac{5}{8}$	20	3	6	$10\frac{5}{8}$	21	$3\frac{5}{8}$
5	$10\frac{3}{4}$	18	$2\frac{3}{8}$	6	$2\frac{3}{4}$	19	$2\frac{7}{8}$	6	$6\frac{3}{4}$	20	$3\frac{1}{2}$	6	$10\frac{3}{4}$	21	4
5	$10\frac{7}{8}$	18	$2\frac{3}{4}$	6	$2\frac{7}{8}$	19	$3\frac{1}{4}$	6	$6\frac{7}{8}$	20	$3\frac{7}{8}$	6	$10\frac{7}{8}$	21	$4\frac{3}{8}$
5	11	18	$3\frac{1}{8}$	6	3	19	$3\frac{5}{8}$	6	7	20	$4\frac{1}{4}$	6	11	21	$4\frac{3}{4}$
5	$11\frac{1}{8}$	18	$3\frac{1}{2}$	6	$3\frac{1}{8}$	19	4	6	$7\frac{1}{8}$	20	$4\frac{5}{8}$	6	$11\frac{1}{8}$	21	$5\frac{1}{8}$
5	$11\frac{1}{4}$	18	$3\frac{7}{8}$	6	$3\frac{1}{4}$	19	$4\frac{1}{2}$	6	$7\frac{1}{4}$	20	5	6	$11\frac{1}{4}$	21	$5\frac{1}{2}$
5	$11\frac{3}{8}$	18	$4\frac{1}{4}$	6	$3\frac{3}{8}$	19	$4\frac{7}{8}$	6	$7\frac{3}{8}$	20	$5\frac{3}{8}$	6	$11\frac{3}{8}$	21	6
5	$11\frac{1}{2}$	18	$4\frac{5}{8}$	6	$3\frac{1}{2}$	19	$5\frac{1}{4}$	6	$7\frac{1}{2}$	20	$5\frac{7}{8}$	6	$11\frac{1}{2}$	21	$6\frac{3}{8}$
5	$11\frac{5}{8}$	18	5	6	$3\frac{5}{8}$	19	$5\frac{5}{8}$	6	$7\frac{5}{8}$	20	$6\frac{1}{4}$	6	$11\frac{5}{8}$	21	$6\frac{3}{4}$
5	$11\frac{3}{4}$	18	$5\frac{1}{2}$	6	$3\frac{3}{4}$	19	6	6	$7\frac{3}{4}$	20	$6\frac{5}{8}$	6	$11\frac{3}{4}$	21	$7\frac{1}{8}$
5	$11\frac{7}{8}$	18	$5\frac{7}{8}$	6	$3\frac{7}{8}$	19	$6\frac{3}{8}$	6	$7\frac{7}{8}$	20	7	6	$11\frac{7}{8}$	21	$7\frac{5}{8}$
6	0	18	$6\frac{1}{4}$	6	4	19	$6\frac{7}{8}$	6	8	20	$7\frac{3}{8}$	7	0	21	8
6	$0\frac{1}{8}$	18	$6\frac{3}{8}$	6	$4\frac{1}{8}$	19	$7\frac{1}{4}$	6	$8\frac{1}{8}$	20	$7\frac{3}{4}$	7	$0\frac{1}{8}$	21	$8\frac{3}{8}$
6	$0\frac{1}{4}$	18	7	6	$4\frac{1}{4}$	19	$7\frac{5}{8}$	6	$8\frac{1}{4}$	20	$8\frac{1}{8}$	7	$0\frac{1}{4}$	21	$8\frac{3}{4}$
6	$0\frac{3}{8}$	18	$7\frac{3}{8}$	6	$4\frac{3}{8}$	19	8	6	$8\frac{3}{8}$	20	$8\frac{1}{2}$	7	$0\frac{3}{8}$	21	$9\frac{1}{8}$
6	$0\frac{1}{2}$	18	$7\frac{7}{8}$	6	$4\frac{1}{2}$	19	$8\frac{3}{8}$	6	$8\frac{1}{2}$	20	9	7	$0\frac{1}{2}$	21	$9\frac{1}{2}$
6	$0\frac{5}{8}$	18	$8\frac{1}{4}$	6	$4\frac{5}{8}$	19	$8\frac{3}{4}$	6	$8\frac{5}{8}$	20	$9\frac{3}{8}$	7	$0\frac{5}{8}$	21	$9\frac{7}{8}$
6	$0\frac{3}{4}$	18	$8\frac{5}{8}$	6	$4\frac{3}{4}$	19	$9\frac{1}{8}$	6	$8\frac{3}{4}$	20.	$9\frac{3}{4}$	7	$0\frac{3}{4}$	21	$10\frac{3}{8}$
6	$0\frac{7}{8}$	18	9	6	$4\frac{7}{8}$	19	$9\frac{3}{8}$	6	$8\frac{7}{8}$	20	$10\frac{1}{8}$	7	$0\frac{7}{8}$	21	$10\frac{3}{4}$
6	1	18	$9\frac{3}{8}$	6	5	19	10	6	9	20	$10\frac{1}{2}$	7	1	21	$11\frac{1}{8}$
6	$1\frac{1}{8}$	18	$9\frac{3}{4}$	6	$5\frac{1}{8}$	19	$10\frac{3}{8}$	6	$9\frac{1}{8}$	20	$10\frac{7}{8}$	7	$1\frac{1}{8}$	21	$11\frac{1}{2}$
6	$1\frac{1}{4}$	18	$10\frac{1}{8}$	6	$5\frac{1}{4}$	19	$10\frac{3}{4}$	6	$9\frac{1}{4}$	20	$11\frac{3}{8}$	7	$1\frac{1}{4}$	21	$11\frac{7}{8}$
6	$1\frac{3}{8}$	18	$10\frac{1}{2}$	6	$5\frac{3}{8}$	19	$11\frac{1}{8}$	6	$9\frac{3}{8}$	20	$11\frac{3}{4}$	7	$1\frac{3}{8}$	22	$0\frac{1}{8}$
6	$1\frac{1}{2}$	18	11	6	$5\frac{1}{2}$	19	$11\frac{1}{2}$	6	$9\frac{1}{2}$	21	$0\frac{1}{8}$	7	$1\frac{1}{2}$	22	$0\frac{5}{8}$
6	$1\frac{5}{8}$	18	$11\frac{3}{8}$	6	$5\frac{5}{8}$	19	$11\frac{7}{8}$	6	$9\frac{5}{8}$	21	$0\frac{1}{2}$	7	$1\frac{5}{8}$	22	1
6	$1\frac{3}{4}$	18	$11\frac{3}{4}$	6	$5\frac{3}{4}$	20	$0\frac{3}{8}$	6	$9\frac{3}{4}$	21	$0\frac{7}{8}$	7	$1\frac{3}{4}$	22	$1\frac{1}{8}$
6	$1\frac{7}{8}$	19	$0\frac{1}{8}$	6	$5\frac{7}{8}$	20	$0\frac{3}{4}$	6	$9\frac{7}{8}$	21	$1\frac{1}{4}$	7	$1\frac{7}{8}$	22	$1\frac{7}{8}$

For Angle Iron measuring $\frac{5}{8}$ of an Inch thick, diagonally across the root

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN
7	2	22	2¼	7	6	23	2¾	7	10	24	3⅜	8	2	25	3⅞
7	2⅛	22	2⅝	7	6⅛	23	3¼	7	10⅛	24	3¾	8	2⅛	25	4⅜
7	2¼	22	3	7	6¼	23	3⅝	7	10¼	24	4⅛	8	2¼	25	4¾
7	2⅜	22	3⅜	7	6⅜	23	4	7	10⅜	24	4½	8	2⅜	25	5⅛
7	2½	22	3⅞	7	6½	23	4⅜	7	10½	24	4⅞	8	2½	25	5½
7	2⅝	22	4¼	7	6⅝	23	4¾	7	10⅝	24	5⅜	8	2⅝	25	5⅞
7	2¾	22	4⅝	7	6¾	23	5⅛	7	10¾	24	5¾	8	2¾	25	6¼
7	2⅞	22	5	7	6⅞	23	5½	7	10⅞	24	6⅛	8	2⅞	25	6⅝
7	3	22	5⅜	7	7	23	6	7	11	24	6½	8	3	25	7
7	3⅛	22	5¾	7	7⅛	23	6⅜	7	11⅛	24	6⅞	8	3⅛	25	7½
7	3¼	22	6⅛	7	7¼	23	6¾	7	11¼	24	7¼	8	3¼	25	7⅞
7	3⅜	22	6½	7	7⅜	23	7⅛	7	11⅜	24	7⅝	8	3⅜	25	8¼
7	3½	22	7	7	7½	23	7½	7	11½	24	8	8	3½	25	8⅝
7	3⅝	22	7⅜	7	7⅝	23	7⅞	7	11⅝	24	8½	8	3⅝	25	9
7	3¾	22	7¾	7	7¾	23	8¼	7	11¾	24	8⅞	8	3¾	25	9½
7	3⅞	22	8⅛	7	7⅞	23	8¾	7	11⅞	24	9¼	8	3⅞	25	9⅞
7	4	22	8½	7	8	23	9⅛	8	0	24	9⅝	8	4	25	10¼
7	4⅛	22	8⅞	7	8⅛	23	9½	8	0⅛	24	10	8	4⅛	25	10⅝
7	4¼	22	9¼	7	8¼	23	9⅞	8	0¼	24	10½	8	4¼	25	11
7	4⅜	22	9¾	7	8⅜	23	10¼	8	0⅜	24	10⅞	8	4⅜	25	11⅜
7	4½	22	10⅛	7	8½	23	10⅝	8	0½	24	11¼	8	4½	25	11¾
7	4⅝	22	10½	7	8⅝	23	11	8	0⅝	24	11⅝	8	4⅝	26	0⅛
7	4¾	22	10⅞	7	8¾	23	11½	8	0¾	25	0	8	4¾	26	0⅝
7	4⅞	22	11¼	7	8⅞	23	11⅞	8	0⅞	25	0⅜	8	4⅞	26	1
7	5	22	11⅝	7	9	24	0¼	8	1	25	0¾	8	5	26	1⅜
7	5⅛	23	0	7	9⅛	24	0⅝	8	1⅛	25	1¼	8	5⅛	26	1¾
7	5¼	23	0½	7	9¼	24	1	8	1¼	25	1⅝	8	5¼	26	2⅛
7	5⅜	23	0⅞	7	9⅜	24	1⅜	8	1⅜	25	2	8	5⅜	26	2½
7	5½	23	1¼	7	9½	24	1¾	8	1½	25	2⅜	8	5½	26	2⅞
7	5⅝	23	1⅝	7	9⅝	24	2¼	8	1⅝	25	2¾	8	5⅝	26	3⅜
7	5¾	23	2	7	9¾	24	2⅝	8	1¾	25	3⅛	8	5¾	26	3¾
7	5⅞	23	2⅜	7	9⅞	24	3	8	1⅞	25	3½	8	5⅞	26	4⅛

TABLE XIV.

For Angle Iron measuring ¾ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
0	9	1	11½	1	1	3	0⅛	1	5	4	0⅝	1	9	5	1¼
0	9⅛	1	11⅞	1	1⅛	3	0½	1	5⅛	4	1	1	9⅛	5	1⅝
0	9¼	2	0⅜	1	1¼	3	0⅞	1	5¼	4	1⅜	1	9¼	5	2
0	9⅜	2	0¾	1	1⅜	3	1¼	1	5⅜	4	1⅞	1	9⅜	5	2⅜
0	9½	2	1⅛	1	1½	3	1⅝	1	5½	4	2¼	1	9½	5	2¾
0	9⅝	2	1½	1	1⅝	3	2	1	5⅝	4	2⅝	1	9⅝	5	3⅛
0	9¾	2	1⅞	1	1¾	3	2½	1	5¾	4	3	1	9¾	5	3⅝
0	9⅞	2	2⅜	1	1⅞	3	2⅞	1	5⅞	4	3⅜	1	9⅞	5	4
0	10	2	2¾	1	2	3	3⅛	1	6	4	3¾	1	10	5	4⅜
0	10⅛	2	3⅛	1	2⅛	3	3⅝	1	6⅛	4	4⅛	1	10⅛	5	4¾
0	10¼	2	3½	1	2¼	3	4	1	6¼	4	4½	1	10¼	5	5⅛
0	10⅜	2	3⅞	1	2⅜	3	4⅜	1	6⅜	4	5	1	10⅜	5	5½
0	10½	2	4¼	1	2½	3	4⅞	1	6½	4	5⅜	1	10½	5	5⅞
0	10⅝	2	4⅝	1	2⅝	3	5¼	1	6⅝	4	5¾	1	10⅝	5	6⅜
0	10¾	2	5	1	2¾	3	5⅝	1	6¾	4	6⅛	1	10¾	5	6¾
0	10⅞	2	5½	1	2⅞	3	6	1	6⅞	4	6½	1	10⅞	5	7⅛
0	11	2	5⅞	1	3	3	6⅜	1	7	4	7	1	11	5	7½
0	11⅛	2	6¼	1	3⅛	3	6¾	1	7⅛	4	7⅜	1	11⅛	5	8
0	11¼	2	6⅝	1	3¼	3	7⅛	1	7¼	4	7¾	1	11¼	5	8⅜
0	11⅜	2	7	1	3⅜	3	7⅝	1	7⅜	4	8⅛	1	11⅜	5	8¾
0	11½	2	7⅜	1	3½	3	8	1	7½	4	8½	1	11½	5	9⅛
0	11⅝	2	7¾	1	3⅝	3	8⅜	1	7⅝	4	8⅞	1	11⅝	5	9½
0	11¾	2	8¼	1	3¾	3	8¾	1	7¾	4	9¼	1	11¾	5	9⅞
0	11⅞	2	8⅝	1	3⅞	3	9⅛	1	7⅞	4	9⅝	1	11⅞	5	10¼
1	0	2	9	1	4	3	9½	1	8	4	10⅛	2	0	5	10⅝
1	0⅛	2	9⅜	1	4⅛	3	9⅞	1	8⅛	4	10½	2	0⅛	5	11
1	0¼	2	9¾	1	4¼	3	10⅜	1	8¼	4	10⅞	2	0¼	5	11⅜
1	0⅜	2	10⅛	1	4⅜	3	10¾	1	8⅜	4	11¼	2	0⅜	5	11⅞
1	0½	2	10½	1	4½	3	11⅛	1	8½	4	11⅝	2	0½	6	0¼
1	0⅝	2	10⅞	1	4⅝	3	11½	1	8⅝	5	0	2	0⅝	6	0⅝
1	0¾	2	11⅜	1	4¾	3	11⅞	1	8¾	5	0⅜	2	0¾	6	1
1	0⅞	2	11¾	1	4⅞	4	0¼	1	8⅞	5	0⅞	2	0⅞	6	1⅜

For ANGLE IRON measuring ¾ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
2	1	6	1¾	2	5	7	2⅜	2	9	8	2⅞	3	1	9	3½
2	1⅛	6	2¼	2	5⅛	7	2¾	2	9⅛	8	3⅜	3	1⅛	9	3⅞
2	1¼	6	2⅝	2	5¼	7	3⅛	2	9¼	8	3¾	3	1¼	9	4¼
2	1⅜	6	3	2	5⅜	7	3½	2	9⅜	8	4⅛	3	1⅜	9	4⅝
2	1½	6	3⅜	2	5½	7	3⅞	2	9½	8	4½	3	1½	9	5
2	1⅝	6	3¾	2	5⅝	7	4⅜	2	9⅝	8	4⅞	3	1⅝	9	5½
2	1¾	6	4⅛	2	5¾	7	4¾	2	9¾	8	5¼	3	1¾	9	5⅞
2	1⅞	6	4½	2	5⅞	7	5⅛	2	9⅞	8	5⅝	3	1⅞	9	6¼
2	2	6	4⅞	2	6	7	5½	2	10	8	6	3	2	9	6⅝
2	2⅛	6	5⅜	2	6⅛	7	5⅞	2	10⅛	8	6½	3	2⅛	9	7
2	2¼	6	5¾	2	6¼	7	6¼	2	10¼	8	6⅞	3	2¼	9	7⅜
2	2⅜	6	6⅛	2	6⅜	7	6⅝	2	10⅜	8	7¼	3	2⅜	9	7⅞
2	2½	6	6½	2	6½	7	7	2	10½	8	7⅝	3	2½	9	8¼
2	2⅝	6	6⅞	2	6⅝	7	7½	2	10⅝	8	8	3	2⅝	9	8⅝
2	2¾	6	7¼	2	6¾	7	7⅞	2	10¾	8	8⅜	3	2¾	9	9
2	2⅞	6	7⅝	2	6⅞	7	8¼	2	10⅞	8	8⅞	3	2⅞	9	9⅜
2	3	6	8⅛	2	7	7	8⅝	2	11	8	9¼	3	3	9	9¾
2	3⅛	6	8½	2	7⅛	7	9	2	11⅛	8	9⅝	3	3⅛	9	10⅛
2	3¼	6	8⅞	2	7¼	7	9⅜	2	11¼	8	10	3	3¼	9	10½
2	3⅜	6	9¼	2	7⅜	7	9¾	2	11⅜	8	10⅜	3	3⅜	9	10⅞
2	3½	6	9⅝	2	7½	7	10¼	2	11½	8	10¾	3	3½	9	11⅜
2	3⅝	6	10	2	7⅝	7	10⅝	2	11⅝	8	11⅛	3	3⅝	9	11¾
2	3¾	6	10½	2	7¾	7	11	2	11¾	8	11½	3	3¾	10	0⅛
2	3⅞	6	10⅞	2	7⅞	7	11⅜	2	11⅞	9	0	3	3⅞	10	0½
2	4	6	11¼	2	8	7	11¾	3	0	9	0⅜	3	4	10	0⅞
2	4⅛	6	11⅝	2	8⅛	8	0⅛	3	0⅛	9	0¾	3	4⅛	10	1⅜
2	4¼	7	0	2	8¼	8	0⅓	3	0¼	9	1⅛	3	4¼	10	1¾
2	4⅜	7	0⅜	2	8⅜	8	1	3	0⅜	9	1½	3	4⅜	10	2⅛
2	4½	7	0¾	2	8½	8	1⅜	3	0½	9	1⅞	3	4½	10	2½
2	4⅝	7	1⅛	2	8⅝	8	1¾	3	0⅝	9	2⅜	3	4⅝	10	2⅞
2	4¾	7	1½	2	8¾	8	2⅛	3	0¾	9	2¾	3	4¾	10	3¼
2	4⅞	7	2	2	8⅞	8	2½	3	0⅞	9	3⅛	3	4⅞	10	3⅝

For Angle Iron measuring $\frac{3}{4}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
8	5	10	4	8	9	11	$4\frac{5}{8}$	4	1	12	$5\frac{1}{4}$	4	5	13	$5\frac{3}{4}$
8	$5\frac{1}{8}$	10	$4\frac{1}{2}$	8	$9\frac{1}{8}$	11	5	4	$1\frac{1}{8}$	12	$5\frac{5}{8}$	4	$5\frac{1}{8}$	13	$6\frac{1}{8}$
8	$5\frac{1}{4}$	10	$4\frac{7}{8}$	8	$9\frac{1}{4}$	11	$5\frac{3}{8}$	4	$1\frac{1}{4}$	12	6	4	$5\frac{1}{4}$	13	$6\frac{1}{2}$
8	$5\frac{3}{8}$	10	$5\frac{1}{4}$	8	$9\frac{3}{8}$	11	$5\frac{3}{4}$	4	$1\frac{3}{8}$	12	$6\frac{3}{8}$	4	$5\frac{3}{8}$	13	7
8	$5\frac{1}{2}$	10	$5\frac{5}{8}$	8	$9\frac{1}{2}$	11	$6\frac{1}{4}$	4	$1\frac{1}{2}$	12	$6\frac{3}{4}$	4	$5\frac{1}{2}$	13	$7\frac{3}{8}$
8	$5\frac{5}{8}$	10	6	8	$9\frac{5}{8}$	11	$6\frac{5}{8}$	4	$1\frac{5}{8}$	12	$7\frac{1}{8}$	4	$5\frac{5}{8}$	13	$7\frac{3}{4}$
8	$5\frac{3}{4}$	10	$6\frac{3}{8}$	8	$9\frac{3}{4}$	11	7	4	$1\frac{3}{4}$	12	$7\frac{1}{2}$	4	$5\frac{3}{4}$	13	$8\frac{1}{8}$
8	$5\frac{7}{8}$	10	$6\frac{7}{8}$	8	$9\frac{7}{8}$	11	$7\frac{3}{8}$	4	$1\frac{7}{8}$	12	$7\frac{7}{8}$	4	$5\frac{7}{8}$	13	$8\frac{1}{8}$
8	6	10	$7\frac{1}{4}$	8	10	11	$7\frac{3}{4}$	4	2	12	$8\frac{3}{8}$	4	6	13	$8\frac{7}{8}$
8	$6\frac{1}{8}$	10	$7\frac{5}{8}$	8	$10\frac{1}{8}$	11	$8\frac{1}{8}$	4	$2\frac{1}{8}$	12	$8\frac{3}{4}$	4	$6\frac{1}{8}$	13	$9\frac{1}{4}$
8	$6\frac{1}{4}$	10	8	8	$10\frac{1}{4}$	11	$8\frac{1}{2}$	4	$2\frac{1}{4}$	12	$9\frac{1}{8}$	4	$6\frac{1}{4}$	13	$9\frac{5}{8}$
8	$6\frac{3}{8}$	10	$8\frac{3}{8}$	8	$10\frac{3}{8}$	11	$8\frac{7}{8}$	4	$2\frac{3}{8}$	12	$9\frac{1}{2}$	4	$6\frac{3}{8}$	13	$10\frac{1}{8}$
8	$6\frac{1}{2}$	10	$8\frac{3}{4}$	8	$10\frac{1}{2}$	11	$9\frac{3}{8}$	4	$2\frac{1}{2}$	12	$9\frac{7}{8}$	4	$6\frac{1}{2}$	13	$10\frac{1}{2}$
8	$6\frac{5}{8}$	10	$9\frac{1}{8}$	8	$10\frac{5}{8}$	11	$9\frac{3}{4}$	4	$2\frac{5}{8}$	12	$10\frac{3}{8}$	4	$6\frac{5}{8}$	13	$10\frac{7}{8}$
8	$6\frac{3}{4}$	10	$9\frac{1}{2}$	8	$10\frac{3}{4}$	11	$10\frac{1}{8}$	4	$2\frac{3}{4}$	12	$10\frac{3}{4}$	4	$6\frac{3}{4}$	13	$11\frac{1}{4}$
8	$6\frac{7}{8}$	10	$9\frac{7}{8}$	8	$10\frac{7}{8}$	11	$10\frac{1}{2}$	4	$2\frac{7}{8}$	12	$11\frac{1}{8}$	4	$6\frac{7}{8}$	13	$11\frac{5}{8}$
8	7	10	$10\frac{3}{8}$	8	11	11	$10\frac{7}{8}$	4	3	12	$11\frac{1}{2}$	4	7	14	0
8	$7\frac{1}{8}$	10	$10\frac{3}{4}$	8	$11\frac{1}{8}$	11	$11\frac{1}{4}$	4	$3\frac{1}{8}$	12	$11\frac{7}{8}$	4	$7\frac{1}{8}$	14	$0\frac{3}{8}$
8	$7\frac{1}{4}$	10	$11\frac{1}{8}$	8	$11\frac{1}{4}$	11	$11\frac{5}{8}$	4	$3\frac{1}{4}$	13	$0\frac{1}{4}$	4	$7\frac{1}{4}$	14	$0\frac{7}{8}$
8	$7\frac{3}{8}$	10	$11\frac{1}{2}$	8	$11\frac{3}{8}$	12	$0\frac{1}{8}$	4	$3\frac{3}{8}$	13	$0\frac{5}{8}$	4	$7\frac{3}{8}$	14	$1\frac{1}{4}$
8	$7\frac{1}{2}$	10	$11\frac{7}{8}$	8	$11\frac{1}{2}$	12	$0\frac{1}{2}$	4	$3\frac{1}{2}$	13	1	4	$7\frac{1}{2}$	14	$1\frac{5}{8}$
8	$7\frac{5}{8}$	11	$0\frac{3}{8}$	8	$11\frac{5}{8}$	12	$0\frac{7}{8}$	4	$3\frac{5}{8}$	13	$1\frac{1}{2}$	4	$7\frac{5}{8}$	14	2
8	$7\frac{3}{4}$	11	$0\frac{3}{4}$	8	$11\frac{3}{4}$	12	$1\frac{1}{4}$	4	$3\frac{3}{4}$	13	$1\frac{7}{8}$	4	$7\frac{3}{4}$	14	$2\frac{3}{8}$
8	$7\frac{7}{8}$	11	$1\frac{1}{8}$	8	$11\frac{7}{8}$	12	$1\frac{5}{8}$	4	$3\frac{7}{8}$	13	$2\frac{1}{4}$	4	$7\frac{7}{8}$	14	$2\frac{3}{4}$
8	8	11	$1\frac{1}{2}$	4	0	12	2	4	4	13	$2\frac{5}{8}$	4	8	14	$3\frac{1}{8}$
8	$8\frac{1}{8}$	11	$1\frac{7}{8}$	4	$0\frac{1}{8}$	12	$2\frac{3}{8}$	4	$4\frac{1}{8}$	13	3	4	$8\frac{1}{8}$	14	$3\frac{1}{2}$
8	$8\frac{1}{4}$	11	$2\frac{1}{4}$	4	$0\frac{1}{4}$	12	$2\frac{7}{8}$	4	$4\frac{1}{4}$	13	$3\frac{3}{8}$	4	$8\frac{1}{4}$	14	4
8	$8\frac{3}{8}$	11	$2\frac{5}{8}$	4	$0\frac{3}{8}$	12	$3\frac{1}{4}$	4	$4\frac{3}{8}$	13	$3\frac{3}{4}$	4	$8\frac{3}{8}$	14	$4\frac{3}{8}$
8	$8\frac{1}{2}$	11	3	4	$0\frac{1}{2}$	12	$3\frac{5}{8}$	4	$4\frac{1}{2}$	13	$4\frac{1}{4}$	4	$8\frac{1}{2}$	14	$4\frac{3}{4}$
8	$8\frac{5}{8}$	11	$3\frac{1}{8}$	4	$0\frac{5}{8}$	12	4	4	$4\frac{5}{8}$	13	$4\frac{5}{8}$	4	$8\frac{5}{8}$	14	$5\frac{1}{8}$
8	$8\frac{3}{4}$	11	$3\frac{7}{8}$	4	$0\frac{3}{4}$	12	$4\frac{3}{8}$	4	$4\frac{3}{4}$	13	5	4	$8\frac{3}{4}$	14	$5\frac{1}{2}$
8	$8\frac{7}{8}$	11	$4\frac{1}{4}$	4	$0\frac{7}{8}$	12	$4\frac{3}{4}$	4	$4\frac{7}{8}$	13	$5\frac{3}{8}$	4	$8\frac{7}{8}$	14	$5\frac{7}{8}$

For ANGLE IRON measuring $\frac{1}{4}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
4	9	14	6 3/8	5	1	15	6 7/8	5	5	16	7 1/2	5	9	17	8
4	9 1/8	14	6 3/4	5	1 1/8	15	7 1/4	5	5 1/8	16	7 3/8	5	9 1/8	17	8 3/8
4	9 1/4	14	7 1/8	5	1 1/4	15	7 3/4	5	5 1/4	16	8 1/4	5	9 1/4	17	8 7/8
4	9 3/8	14	7 1/4	5	1 3/8	15	8 1/8	5	5 3/8	16	8 3/8	5	9 3/8	17	9 1/4
4	9 1/2	14	7 3/8	5	1 1/2	15	8 1/2	5	5 1/2	16	9	5	9 1/2	17	9 5/8
4	9 5/8	14	8 1/4	5	1 5/8	15	8 7/8	5	5 5/8	16	9 3/8	5	9 5/8	17	10
4	9 3/4	14	8 3/4	5	1 3/4	15	9 1/4	5	5 3/4	16	9 7/8	5	9 3/4	17	10 3/8
4	9 7/8	14	9 1/8	5	1 7/8	15	9 5/8	5	5 7/8	16	10 1/4	5	9 7/8	17	10 3/4
4	10	14	9 1/2	5	2	15	10	5	6	16	10 5/8	5	10	17	11 1/8
4	10 1/8	14	9 7/8	5	2 1/8	15	10 3/8	5	6 1/8	16	11	5	10 1/8	17	11 1/2
4	10 1/4	14	10 1/4	5	2 1/4	15	10 7/8	5	6 1/4	16	11 3/8	5	10 1/4	18	0
4	10 3/8	14	10 5/8	5	2 3/8	15	11 1/4	5	6 3/8	16	11 3/4	5	10 3/8	18	0 3/8
4	10 1/2	14	11	5	2 1/2	15	11 5/8	5	6 1/2	17	0 1/8	5	10 1/2	18	0 3/4
4	10 5/8	14	11 1/2	5	2 5/8	16	0	5	6 5/8	17	0 5/8	5	10 5/8	18	1 1/8
4	10 3/4	14	11 7/8	5	2 3/4	16	0 3/8	5	6 3/4	17	1	5	10 3/4	18	1 1/2
4	10 7/8	15	0 1/4	5	2 7/8	16	0 3/4	5	6 7/8	17	1 3/8	5	10 7/8	18	1 7/8
4	11	15	0 5/8	5	3	16	1 1/8	5	7	17	1 3/4	5	11	18	2 3/8
4	11 1/8	15	1	5	3 1/8	16	1 5/8	5	7 1/8	17	2 1/8	5	11 1/8	18	2 3/4
4	11 1/4	15	1 3/8	5	3 1/4	16	2	5	7 1/4	17	2 1/2	5	11 1/4	18	3 1/8
4	11 3/8	15	1 7/8	5	3 3/8	16	2 3/8	5	7 3/8	17	2 7/8	5	11 3/8	18	3 1/2
4	11 1/2	15	2 1/4	5	3 1/2	16	2 3/4	5	7 1/2	17	3 3/8	5	11 1/2	18	3 7/8
4	11 5/8	15	2 5/8	5	3 5/8	16	3 1/8	5	7 5/8	17	3 3/4	5	11 5/8	18	4 1/4
4	11 3/4	15	3	5	3 3/4	16	3 1/2	5	7 3/4	17	4 1/8	5	11 3/4	18	4 5/8
4	11 7/8	15	3 3/8	5	3 7/8	16	3 7/8	5	7 7/8	17	4 1/2	5	11 7/8	18	5
5	0	15	3 3/4	5	4	16	4 3/8	5	8	17	4 7/8	6	0	18	5 1/2
5	0 1/8	15	4 1/8	5	4 1/8	16	4 3/4	5	8 1/8	17	5 1/4	6	0 1/8	18	5 7/8
5	0 1/4	15	4 1/2	5	4 1/4	16	5 1/8	5	8 1/4	17	5 5/8	6	0 1/4	18	6 1/4
5	0 3/8	15	4 7/8	5	4 3/8	16	5 1/2	5	8 3/8	17	6	6	0 3/8	18	6 5/8
5	0 1/2	15	5 3/8	5	4 1/2	16	5 7/8	5	8 1/2	17	6 1/2	6	0 1/2	18	7
5	0 5/8	15	5 3/4	5	4 5/8	16	6 1/4	5	8 5/8	17	6 7/8	6	0 5/8	18	7 3/8
5	0 3/4	15	6 1/8	5	4 3/4	16	6 5/8	5	8 3/4	17	7 1/4	6	0 3/4	18	7 7/8
5	0 7/8	15	6 1/2	5	4 7/8	16	7	5	8 7/8	17	7 5/8	6	0 7/8	18	8 1/4

For Angle Iron measuring $\frac{1}{4}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
6	1	18	8⅝	6	5	19	9⅛	6	9	20	9¾	7	1	21	10⅜
6	1⅛	18	9	6	5⅛	19	9⅜	6	9⅛	20	10⅛	7	1⅛	21	10¾
6	1¼	18	9⅜	6	5¼	19	10	6	9¼	20	10⅓	7	1¼	21	11⅛
6	1⅜	18	9¾	6	5⅜	19	10⅜	6	9⅜	20	10⅞	7	1⅜	21	11½
6	1½	18	10⅛	6	5½	19	10¾	6	9½	20	11⅜	7	1½	21	11⅞
6	1⅝	18	10½	6	5⅝	19	11⅛	6	9⅝	20	11¾	7	1⅝	22	0¼
6	1¾	18	11	6	5¾	19	11½	6	9¾	21	0⅛	7	1¾	22	0⅝
6	1⅞	18	11⅜	6	5⅞	19	11⅞	6	9⅞	21	0½	7	1⅞	22	1
6	2	18	11¾	6	6	20	0⅜	6	10	21	0⅞	7	2	22	1½
6	2⅛	19	0⅛	6	6⅛	20	0¾	6	10⅛	21	1¼	7	2⅛	22	1⅞
6	2¼	19	0½	6	6¼	20	1⅛	6	10¼	21	1⅝	7	2¼	22	2¼
6	2⅜	19	0⅞	6	6⅜	20	1½	6	10⅜	21	2	7	2⅜	22	2⅝
6	2½	19	1⅜	6	6½	20	1⅞	6	10½	21	2½	7	2½	22	3
6	2⅝	19	1¾	6	6⅝	20	2¼	6	10⅝	21	2⅞	7	2⅝	22	3⅜
6	2¾	19	2⅛	6	6¾	20	2⅝	6	10¾	21	3¼	7	2¾	22	3⅞
6	2⅞	19	2½	6	6⅞	20	3	6	10⅞	21	3⅝	7	2⅞	22	4¼
6	3	19	2⅞	6	7	20	3½	6	11	21	4	7	3	22	4⅝
6	3⅛	19	3¼	6	7⅛	20	3⅞	6	11⅛	21	4⅜	7	3⅛	22	5
6	3¼	19	3⅝	6	7¼	20	4¼	6	11¼	21	4¾	7	3¼	22	5⅜
6	3⅜	19	4	6	7⅜	20	4⅝	6	11⅜	21	5⅛	7	3⅜	22	5¾
6	3½	19	4⅜	6	7½	20	5	6	11½	21	5½	7	3½	22	6⅛
6	3⅝	19	4⅞	6	7⅝	20	5⅜	6	11⅝	21	6	7	3⅝	22	6½
6	3¾	19	5¼	6	7¾	20	5⅞	6	11¾	21	6⅜	7	3¾	22	7
6	3⅞	19	5⅝	6	7⅞	20	6¼	6	11⅞	21	6¾	7	3⅞	22	7⅜
6	4	19	6	6	8	20	6⅝	7	0	21	7⅛	7	4	22	7¾
6	4⅛	19	6⅜	6	8⅛	20	7	7	0⅛	21	7⅝	7	4⅛	22	8⅛
6	4¼	19	6⅞	6	8¼	20	7⅜	7	0¼	21	8	7	4¼	22	8½
6	4⅜	19	7¼	6	8⅜	20	7¾	7	0⅜	21	8⅜	7	4⅜	22	8⅞
6	4½	19	7⅝	6	8½	20	8⅛	7	0½	21	8¾	7	4½	22	9¼
6	4⅝	19	8	6	8⅝	20	8½	7	0⅝	21	9⅛	7	4⅝	22	9¾
6	4¾	19	8⅜	6	8¾	20	9	7	0¾	21	9½	7	4¾	22	10⅛
6	4⅞	19	8¾	6	8⅞	20	9⅜	7	0⅞	21	9⅞	7	4⅞	22	10½

For Angle Iron measuring $\frac{1}{4}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
7	5	22	$10\frac{7}{8}$	7	9	23	$11\frac{1}{2}$	8	1	25	0	8	5	26	$0\frac{5}{8}$
7	$5\frac{1}{8}$	22	$11\frac{1}{4}$	7	$9\frac{1}{8}$	23	$11\frac{7}{8}$	8	$1\frac{1}{8}$	25	$0\frac{3}{8}$	8	$5\frac{1}{8}$	26	1
7	$5\frac{1}{4}$	22	$11\frac{5}{8}$	7	$9\frac{1}{4}$	23	$0\frac{1}{4}$	8	$1\frac{1}{4}$	25	$0\frac{3}{4}$	8	$5\frac{1}{4}$	26	$1\frac{3}{8}$
7	$5\frac{3}{8}$	23	0	7	$9\frac{3}{8}$	23	$0\frac{5}{8}$	8	$1\frac{3}{8}$	25	$1\frac{1}{4}$	8	$5\frac{3}{8}$	26	$1\frac{3}{4}$
7	$5\frac{1}{2}$	23	$0\frac{1}{2}$	7	$9\frac{1}{2}$	24	1	8	$1\frac{1}{2}$	25	$1\frac{5}{8}$	8	$5\frac{1}{2}$	26	$2\frac{1}{8}$
7	$5\frac{5}{8}$	23	$0\frac{7}{8}$	7	$9\frac{5}{8}$	24	$1\frac{3}{8}$	8	$1\frac{5}{8}$	25	2	8	$5\frac{5}{8}$	26	$2\frac{1}{4}$
7	$5\frac{3}{4}$	23	$1\frac{1}{4}$	7	$9\frac{3}{4}$	24	$1\frac{3}{4}$	8	$1\frac{3}{4}$	25	$2\frac{3}{8}$	8	$5\frac{3}{4}$	26	$2\frac{7}{8}$
7	$5\frac{7}{8}$	23	$1\frac{5}{8}$	7	$9\frac{7}{8}$	24	$2\frac{1}{4}$	8	$1\frac{7}{8}$	25	$2\frac{3}{4}$	8	$5\frac{7}{8}$	26	$3\frac{3}{8}$
7	6	23	2	7	10	24	$2\frac{5}{8}$	8	2	25	$3\frac{1}{8}$	8	6	26	$3\frac{3}{4}$
7	$6\frac{1}{8}$	23	$2\frac{3}{8}$	7	$10\frac{1}{8}$	24	3	8	$2\frac{1}{8}$	25	$3\frac{1}{2}$	8	$6\frac{1}{8}$	26	$4\frac{1}{8}$
7	$6\frac{1}{4}$	23	$2\frac{3}{4}$	7	$10\frac{1}{4}$	24	$3\frac{3}{8}$	8	$2\frac{1}{4}$	25	$3\frac{7}{8}$	8	$6\frac{1}{4}$	26	$4\frac{1}{2}$
7	$6\frac{3}{8}$	23	$3\frac{1}{4}$	7	$10\frac{3}{8}$	24	$3\frac{3}{4}$	8	$2\frac{3}{8}$	25	$4\frac{3}{8}$	8	$6\frac{3}{8}$	26	$4\frac{7}{8}$
7	$6\frac{1}{2}$	23	$3\frac{5}{8}$	7	$10\frac{1}{2}$	24	$4\frac{1}{8}$	8	$2\frac{1}{2}$	25	$4\frac{3}{4}$	8	$6\frac{1}{2}$	26	$5\frac{1}{4}$
7	$6\frac{5}{8}$	23	4	7	$10\frac{5}{8}$	24	$4\frac{1}{2}$	8	$2\frac{5}{8}$	25	$5\frac{1}{8}$	8	$6\frac{5}{8}$	26	$5\frac{5}{8}$
7	$6\frac{3}{4}$	23	$4\frac{3}{8}$	7	$10\frac{3}{4}$	24	$4\frac{7}{8}$	8	$2\frac{3}{4}$	25	$5\frac{1}{2}$	8	$6\frac{3}{4}$	26	6
7	$6\frac{7}{8}$	23	$4\frac{3}{4}$	7	$10\frac{7}{8}$	24	$5\frac{3}{8}$	8	$2\frac{7}{8}$	25	$5\frac{7}{8}$	8	$6\frac{7}{8}$	26	$6\frac{1}{2}$
7	7	23	$5\frac{1}{8}$	7	11	24	$5\frac{3}{4}$	8	3	25	$6\frac{1}{4}$	8	7	26	$6\frac{7}{8}$
7	$7\frac{1}{8}$	23	$5\frac{1}{2}$	7	$11\frac{1}{8}$	24	$6\frac{1}{8}$	8	$3\frac{1}{8}$	25	$6\frac{5}{8}$	8	$7\frac{1}{8}$	26	$7\frac{1}{4}$
7	$7\frac{1}{4}$	23	6	7	$11\frac{1}{4}$	24	$6\frac{1}{2}$	8	$3\frac{1}{4}$	25	7	8	$7\frac{1}{4}$	26	$7\frac{5}{8}$
7	$7\frac{3}{8}$	23	$6\frac{3}{8}$	7	$11\frac{3}{8}$	24	$6\frac{7}{8}$	8	$3\frac{3}{8}$	25	$7\frac{1}{2}$	8	$7\frac{3}{8}$	26	8
7	$7\frac{1}{2}$	23	$6\frac{3}{4}$	7	$11\frac{1}{2}$	24	$7\frac{1}{4}$	8	$3\frac{1}{2}$	25	$7\frac{7}{8}$	8	$7\frac{1}{2}$	26	$8\frac{3}{8}$
7	$7\frac{5}{8}$	23	$7\frac{1}{8}$	7	$11\frac{5}{8}$	24	$7\frac{5}{8}$	8	$3\frac{5}{8}$	25	$8\frac{1}{4}$	8	$7\frac{5}{8}$	26	$8\frac{7}{8}$
7	$7\frac{3}{4}$	23	$7\frac{1}{2}$	7	$11\frac{3}{4}$	24	8	8	$3\frac{3}{4}$	25	$8\frac{5}{8}$	8	$7\frac{3}{4}$	26	$9\frac{1}{4}$
7	$7\frac{7}{8}$	23	$7\frac{7}{8}$	7	$11\frac{7}{8}$	24	$8\frac{1}{2}$	8	$3\frac{7}{8}$	25	9	8	$7\frac{7}{8}$	26	$9\frac{5}{8}$
7	8	23	$8\frac{1}{4}$	8	0	24	$8\frac{7}{8}$	8	4	25	$9\frac{1}{2}$	8	8	26	10
7	$8\frac{1}{8}$	23	$8\frac{3}{4}$	8	$0\frac{1}{8}$	24	$9\frac{1}{4}$	8	$4\frac{1}{8}$	25	$9\frac{7}{8}$	8	$8\frac{1}{8}$	26	$10\frac{3}{8}$
7	$8\frac{1}{4}$	23	$9\frac{1}{8}$	8	$0\frac{1}{4}$	24	$9\frac{5}{8}$	8	$4\frac{1}{4}$	25	$10\frac{1}{4}$	8	$8\frac{1}{4}$	26	$10\frac{3}{4}$
7	$8\frac{3}{8}$	23	$9\frac{1}{2}$	8	$0\frac{3}{8}$	24	10	8	$4\frac{3}{8}$	25	$10\frac{5}{8}$	8	$8\frac{3}{8}$	26	$11\frac{1}{8}$
7	$8\frac{1}{2}$	23	$9\frac{7}{8}$	8	$0\frac{1}{2}$	24	$10\frac{1}{2}$	8	$4\frac{1}{2}$	25	11	8	$8\frac{1}{2}$	26	$11\frac{1}{2}$
7	$8\frac{5}{8}$	23	$10\frac{1}{4}$	8	$0\frac{5}{8}$	24	$10\frac{7}{8}$	8	$4\frac{5}{8}$	25	$11\frac{3}{8}$	8	$8\frac{5}{8}$	27	0
7	$8\frac{3}{4}$	23	$10\frac{5}{8}$	8	$0\frac{3}{4}$	24	$11\frac{1}{4}$	8	$4\frac{3}{4}$	25	$11\frac{3}{4}$	8	$8\frac{3}{4}$	27	$0\frac{3}{8}$
7	$8\frac{7}{8}$	23	11	8	$0\frac{7}{8}$	24	$11\frac{5}{8}$	8	$4\frac{7}{8}$	26	$0\frac{1}{8}$	8	$8\frac{7}{8}$	27	$0\frac{3}{4}$

TABLE XV.

For Angle Iron measuring $\frac{7}{8}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
0	9	1	$10\frac{3}{4}$	1	1	2	$11\frac{3}{8}$	1	5	3	$11\frac{7}{8}$	1	9	5	$0\frac{3}{8}$
0	$9\frac{1}{8}$	1	$11\frac{1}{8}$	1	$1\frac{1}{8}$	2	$11\frac{3}{4}$	1	$5\frac{1}{8}$	4	$0\frac{1}{4}$	1	$9\frac{1}{8}$	5	$0\frac{7}{8}$
0	$9\frac{1}{4}$	1	$11\frac{1}{2}$	1	$1\frac{1}{4}$	3	$0\frac{1}{8}$	1	$5\frac{1}{4}$	4	$0\frac{3}{8}$	1	$9\frac{1}{4}$	5	$1\frac{1}{4}$
0	$9\frac{3}{8}$	1	$11\frac{7}{8}$	1	$1\frac{3}{8}$	3	$0\frac{1}{4}$	1	$5\frac{3}{8}$	4	1	1	$9\frac{3}{8}$	5	$1\frac{3}{8}$
0	$9\frac{1}{2}$	2	$0\frac{3}{8}$	1	$1\frac{1}{2}$	3	$0\frac{7}{8}$	1	$5\frac{1}{2}$	4	$1\frac{3}{8}$	1	$9\frac{1}{2}$	5	2
0	$9\frac{5}{8}$	2	$0\frac{3}{4}$	1	$1\frac{5}{8}$	3	$1\frac{1}{4}$	1	$5\frac{5}{8}$	4	$1\frac{7}{8}$	1	$9\frac{5}{8}$	5	$2\frac{3}{8}$
0	$9\frac{3}{4}$	2	$1\frac{1}{8}$	1	$1\frac{3}{4}$	3	$1\frac{5}{8}$	1	$5\frac{3}{4}$	4	$2\frac{1}{4}$	1	$9\frac{3}{4}$	5	$2\frac{3}{4}$
0	$9\frac{7}{8}$	2	$1\frac{1}{4}$	1	$1\frac{7}{8}$	3	2	1	$5\frac{7}{8}$	4	$2\frac{5}{8}$	1	$9\frac{7}{8}$	5	$3\frac{1}{8}$
0	10	2	$1\frac{7}{8}$	1	2	3	$2\frac{1}{2}$	1	6	4	3	1	10	5	$3\frac{5}{8}$
0	$10\frac{1}{8}$	2	$2\frac{3}{8}$	1	$2\frac{1}{8}$	3	$2\frac{7}{8}$	1	$6\frac{1}{8}$	4	$3\frac{3}{8}$	1	$10\frac{1}{8}$	5	4
0	$10\frac{1}{4}$	2	$2\frac{3}{4}$	1	$2\frac{1}{4}$	3	$3\frac{1}{4}$	1	$6\frac{1}{4}$	4	$3\frac{3}{4}$	1	$10\frac{1}{4}$	5	$4\frac{3}{8}$
0	$10\frac{3}{8}$	2	$3\frac{1}{8}$	1	$2\frac{3}{8}$	3	$3\frac{5}{8}$	1	$6\frac{3}{8}$	4	$4\frac{1}{8}$	1	$10\frac{3}{8}$	5	$4\frac{3}{4}$
0	$10\frac{1}{2}$	2	$3\frac{1}{2}$	1	$2\frac{1}{2}$	3	4	1	$6\frac{1}{2}$	4	$4\frac{1}{2}$	1	$10\frac{1}{2}$	5	$5\frac{1}{8}$
0	$10\frac{5}{8}$	2	$3\frac{7}{8}$	1	$2\frac{5}{8}$	3	$4\frac{3}{8}$	1	$6\frac{5}{8}$	4	5	1	$10\frac{5}{8}$	5	$5\frac{1}{2}$
0	$10\frac{3}{4}$	2	$4\frac{1}{4}$	1	$2\frac{3}{4}$	3	$4\frac{7}{8}$	1	$6\frac{3}{4}$	4	$5\frac{3}{8}$	1	$10\frac{3}{4}$	5	$5\frac{7}{8}$
0	$10\frac{7}{8}$	2	$4\frac{5}{8}$	1	$2\frac{7}{8}$	3	$5\frac{1}{4}$	1	$6\frac{7}{8}$	4	$5\frac{3}{4}$	1	$10\frac{7}{8}$	5	$6\frac{3}{8}$
0	11	2	5	1	3	3	$5\frac{5}{8}$	1	7	4	$6\frac{1}{8}$	1	11	5	$6\frac{3}{4}$
0	$11\frac{1}{8}$	2	$5\frac{1}{2}$	1	$3\frac{1}{8}$	3	6	1	$7\frac{1}{8}$	4	$6\frac{1}{2}$	1	$11\frac{1}{8}$	5	$7\frac{1}{8}$
0	$11\frac{1}{4}$	2	$5\frac{7}{8}$	1	$3\frac{1}{4}$	3	$6\frac{3}{8}$	1	$7\frac{1}{4}$	4	7	1	$11\frac{1}{4}$	5	$7\frac{1}{2}$
0	$11\frac{3}{8}$	2	$6\frac{1}{4}$	1	$3\frac{3}{8}$	3	$6\frac{3}{4}$	1	$7\frac{3}{8}$	4	$7\frac{3}{8}$	1	$11\frac{3}{8}$	5	8
0	$11\frac{1}{2}$	2	$6\frac{5}{8}$	1	$3\frac{1}{2}$	3	$7\frac{1}{8}$	1	$7\frac{1}{2}$	4	$7\frac{3}{4}$	1	$11\frac{1}{2}$	5	$8\frac{3}{8}$
0	$11\frac{5}{8}$	2	7	1	$3\frac{5}{8}$	3	$7\frac{5}{8}$	1	$7\frac{5}{8}$	4	$8\frac{1}{8}$	1	$11\frac{5}{8}$	5	$8\frac{3}{4}$
0	$11\frac{3}{4}$	2	$7\frac{3}{8}$	1	$3\frac{3}{4}$	3	8	1	$7\frac{3}{4}$	4	$8\frac{1}{2}$	1	$11\frac{3}{4}$	5	$9\frac{1}{8}$
0	$11\frac{7}{8}$	2	$7\frac{3}{4}$	1	$3\frac{7}{8}$	3	$8\frac{3}{8}$	1	$7\frac{7}{8}$	4	$8\frac{7}{8}$	1	$11\frac{7}{8}$	5	$9\frac{1}{2}$
1	0	2	$8\frac{1}{4}$	1	4	3	$8\frac{3}{4}$	1	8	4	$9\frac{1}{4}$	2	0	5	$9\frac{7}{8}$
1	$0\frac{1}{8}$	2	$8\frac{5}{8}$	1	$4\frac{1}{8}$	3	$9\frac{1}{8}$	1	$8\frac{1}{8}$	4	$9\frac{5}{8}$	2	$0\frac{1}{8}$	5	$10\frac{1}{4}$
1	$0\frac{1}{4}$	2	9	1	$4\frac{1}{4}$	3	$9\frac{1}{8}$	1	$8\frac{1}{4}$	4	$10\frac{1}{8}$	2	$0\frac{1}{4}$	5	$10\frac{5}{8}$
1	$0\frac{3}{8}$	2	$9\frac{3}{8}$	1	$4\frac{3}{8}$	3	$9\frac{7}{8}$	1	$8\frac{3}{8}$	4	$10\frac{1}{2}$	2	$0\frac{3}{8}$	5	11
1	$0\frac{1}{2}$	2	$9\frac{3}{4}$	1	$4\frac{1}{2}$	3	$10\frac{3}{8}$	1	$8\frac{1}{2}$	4	$10\frac{7}{8}$	2	$0\frac{1}{2}$	5	$11\frac{1}{2}$
1	$0\frac{5}{8}$	2	$10\frac{1}{8}$	1	$4\frac{5}{8}$	3	$10\frac{3}{4}$	1	$8\frac{5}{8}$	4	$11\frac{1}{4}$	2	$0\frac{5}{8}$	5	$11\frac{7}{8}$
1	$0\frac{3}{4}$	2	$10\frac{1}{2}$	1	$4\frac{3}{4}$	3	$11\frac{1}{8}$	1	$8\frac{3}{4}$	4	$11\frac{5}{8}$	2	$0\frac{3}{4}$	6	$0\frac{1}{4}$
1	$0\frac{7}{8}$	2	$10\frac{7}{8}$	1	$4\frac{7}{8}$	3	$11\frac{1}{2}$	1	$8\frac{7}{8}$	5	0	2	$0\frac{7}{8}$	6	$0\frac{3}{8}$

For Angle Iron measuring $\frac{1}{2}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
2	1	6	1	2	5	7	1½	2	9	8	2⅛	3	1	9	2¾
2	1⅛	6	1⅜	2	5⅛	7	2	2	9⅛	8	2½	3	1⅛	9	3⅛
2	1¼	6	1¾	2	5¼	7	2⅜	2	9¼	8	2⅞	3	1¼	9	3½
2	1⅜	6	2¼	2	5⅜	7	2¾	2	9⅜	8	3⅜	3	1⅜	9	3⅞
2	1½	6	2⅝	2	5½	7	3⅛	2	9½	8	3¾	3	1½	9	4¼
2	1⅝	6	3	2	5⅝	7	3½	2	9⅝	8	4⅛	3	1⅝	9	4⅝
2	1¾	6	3⅜	2	5¾	7	3⅞	2	9¾	8	4½	3	1¾	9	5
2	1⅞	6	3¾	2	5⅞	7	4⅜	2	9⅞	8	4⅞	3	1⅞	9	5½
2	2	6	4⅛	2	6	7	4¾	2	10	8	5¼	3	2	9	5⅞
2	2⅛	6	4½	2	6⅛	7	5⅛	2	10⅛	8	5⅝	3	2⅛	9	6¼
2	2¼	6	4⅞	2	6¼	7	5½	2	10¼	8	6	3	2¼	9	6⅝
2	2⅜	6	5⅜	2	6⅜	7	5⅞	2	10⅜	8	6½	3	2⅜	9	7
2	2½	6	5¾	2	6½	7	6¼	2	10½	8	6⅞	3	2½	9	7⅜
2	2⅝	6	6⅛	2	6⅝	7	6⅝	2	10⅝	8	7¼	3	2⅝	9	7⅞
2	2¾	6	6½	2	6¾	7	7	2	10¾	8	7⅝	3	2¾	9	8¼
2	2⅞	6	6⅞	2	6⅞	7	7½	2	10⅞	8	8	3	2⅞	9	8⅝
2	3	6	7¼	2	7	7	7⅞	2	11	8	8⅜	3	3	9	9
2	3⅛	6	7⅝	2	7⅛	7	8¼	2	11⅛	8	8¾	3	3⅛	9	9⅜
2	3¼	6	8⅛	2	7¼	7	8⅝	2	11¼	8	9¼	3	3¼	9	9¾
2	3⅜	6	8½	2	7⅜	7	9	2	11⅜	8	9⅝	3	3⅜	9	10⅛
2	3½	6	8⅞	2	7½	7	9⅜	2	11½	8	10	3	3½	9	10½
2	3⅝	6	9¼	2	7⅝	7	9¾	2	11⅝	8	10⅜	3	3⅝	9	10⅞
2	3¾	6	9⅝	2	7¾	7	10⅛	2	11¾	8	10¾	3	3¾	9	11⅜
2	3⅞	6	10	2	7⅞	7	10⅝	2	11⅞	8	11⅛	3	3⅞	9	11¾
2	4	6	10½	2	8	7	11	3	0	8	11½	3	4	10	0⅛
2	4⅛	6	10⅞	2	8⅛	7	11⅜	3	0⅛	9	0	3	4⅛	10	0½
2	4¼	6	11¼	2	8¼	7	11¾	3	0¼	9	0⅜	3	4¼	10	0⅞
2	4⅜	6	11⅝	2	8⅜	8	0⅛	3	0⅜	9	0¾	3	4⅜	10	1⅜
2	4½	7	0	2	8½	8	0½	3	0½	9	1⅜	3	4½	10	1¾
2	4⅝	7	0⅜	2	8⅝	8	1	3	0⅝	9	1½	3	4⅝	10	2⅛
2	4¾	7	0¾	2	8¾	8	1⅜	3	0¾	9	1⅞	3	4¾	10	2½
2	4⅞	7	1⅛	2	8⅞	8	1¾	3	0⅞	9	2⅜	3	4⅞	10	2⅞

For ANGLE IRON measuring $\frac{1}{8}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
3	5	10	3 1/4	3	9	11	3 7/8	4	1	12	4 3/8	4	5	13	5
3	5 1/8	10	3 3/8	3	9 1/8	11	4 1/4	4	1 1/8	12	4 3/4	4	5 1/8	13	5 3/8
3	5 1/4	10	4	3	9 1/4	11	4 3/8	4	1 1/4	12	5 1/4	4	5 1/4	13	5 3/4
3	5 3/8	10	4 1/8	3	9 3/8	11	5	4	1 3/8	12	5 3/8	4	5 3/8	13	6 1/8
3	5 1/2	10	4 7/8	3	9 1/2	11	5 3/8	4	1 1/2	12	6	4	5 1/2	13	6 1/2
3	5 5/8	10	5 1/4	3	9 5/8	11	5 3/4	4	1 5/8	12	6 3/8	4	5 5/8	13	7
3	5 3/4	10	5 5/8	3	9 3/4	11	6 1/4	4	1 3/4	12	6 3/4	4	5 3/4	13	7 3/8
3	5 7/8	10	6	3	9 7/8	11	6 5/8	4	1 7/8	12	7 1/8	4	5 7/8	13	7 3/4
3	6	10	6 3/8	3	10	11	7	4	2	12	7 1/2	4	6	13	8 1/8
3	6 1/8	10	6 7/8	3	10 1/8	11	7 3/8	4	2 1/8	12	7 7/8	4	6 1/8	13	8 1/2
3	6 1/4	10	7 1/4	3	10 1/4	11	7 3/4	4	2 1/4	12	8 3/8	4	6 1/4	13	8 7/8
3	6 3/8	10	7 5/8	3	10 3/8	11	8 1/8	4	2 3/8	12	8 3/4	4	6 3/8	13	9 1/4
3	6 1/2	10	8	3	10 1/2	11	8 1/2	4	2 1/2	12	9 1/8	4	6 1/2	13	9 5/8
3	6 5/8	10	8 3/8	3	10 5/8	11	8 7/8	4	2 5/8	12	9 1/2	4	6 5/8	13	10 1/8
3	6 3/4	10	8 3/4	3	10 3/4	11	9 3/8	4	2 3/4	12	9 7/8	4	6 3/4	13	10 1/2
3	6 7/8	10	9 1/8	3	10 7/8	11	9 3/4	4	2 7/8	12	10 3/8	4	6 7/8	13	10 7/8
3	7	10	9 1/2	3	11	11	10 1/8	4	3	12	10 3/4	4	7	13	11 1/4
3	7 1/8	10	9 7/8	3	11 1/8	11	10 1/2	4	3 1/8	12	11 1/8	4	7 1/8	13	11 5/8
3	7 1/4	10	10 3/8	3	11 1/4	11	10 7/8	4	3 1/4	12	11 1/2	4	7 1/4	14	0
3	7 3/8	10	10 3/4	3	11 3/8	11	11 1/4	4	3 3/8	12	11 7/8	4	7 3/8	14	0 3/8
3	7 1/2	10	11 1/8	3	11 1/2	11	11 5/8	4	3 1/2	13	0 1/4	4	7 1/2	14	0 7/8
3	7 5/8	10	11 1/2	3	11 5/8	12	0 1/8	4	3 5/8	13	0 5/8	4	7 5/8	14	1 1/4
3	7 3/4	10	11 7/8	3	11 3/4	12	0 1/2	4	3 3/4	13	1	4	7 3/4	14	1 5/8
3	7 7/8	11	0 3/8	3	11 7/8	12	0 7/8	4	3 7/8	13	1 1/2	4	7 7/8	14	2
3	8	11	0 3/4	4	0	12	1 1/4	4	4	13	1 7/8	4	8	14	2 3/8
3	8 1/8	11	1 1/8	4	0 1/8	12	1 5/8	4	4 1/8	13	2 1/4	4	8 1/8	14	2 3/4
3	8 1/4	11	1 1/2	4	0 1/4	12	2	4	4 1/4	13	2 5/8	4	8 1/4	14	3 1/8
3	8 3/8	11	1 7/8	4	0 3/8	12	2 3/8	4	4 3/8	13	3	4	8 3/8	14	3 1/2
3	8 1/2	11	2 1/4	4	0 1/2	12	2 7/8	4	4 1/2	13	3 3/8	4	8 1/2	14	4
3	8 5/8	11	2 5/8	4	0 5/8	12	3 1/4	4	4 5/8	13	3 3/4	4	8 5/8	14	4 3/8
3	8 3/4	11	3	4	0 3/4	12	3 5/8	4	4 3/4	13	4 1/4	4	8 3/4	14	4 3/4
3	8 7/8	11	3 1/4	4	0 7/8	12	4	4	4 7/8	13	4 5/8	4	8 7/8	14	5 1/8

For Angle Iron measuring $\frac{7}{8}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
4	9	14	5 1/8	5	1	15	6 1/8	5	5	16	6 5/8	5	9	17	7 1/4
4	9 1/8	14	5 7/8	5	1 1/8	15	6 1/2	5	5 1/8	16	7	5	9 1/8	17	7 5/8
4	9 1/4	14	6 3/8	5	1 1/4	15	6 7/8	5	5 1/4	16	7 1/8	5	9 1/4	17	8
4	9 3/8	14	6 3/4	5	1 3/8	15	7 1/4	5	5 3/8	16	7 7/8	5	9 3/8	17	8 3/8
4	9 1/2	14	7 1/8	5	1 1/2	15	7 3/4	5	5 1/2	16	8 1/4	5	9 1/2	17	8 7/8
4	9 5/8	14	7 1/2	5	1 5/8	15	8 1/8	5	5 5/8	16	8 5/8	5	9 5/8	17	9 1/4
4	9 3/4	14	7 7/8	5	1 3/4	15	8 1/2	5	5 3/4	16	9	5	9 3/4	17	9 5/8
4	9 7/8	14	8 1/4	5	1 7/8	15	8 7/8	5	5 7/8	16	9 3/8	5	9 7/8	17	10
4	10	14	8 3/4	5	2	15	9 1/4	5	6	16	9 7/8	5	10	17	10 3/8
4	10 1/8	14	9 1/8	5	2 1/8	15	9 5/8	5	6 1/8	16	10 1/4	5	10 1/8	17	10 3/4
4	10 1/4	14	9 1/2	5	2 1/4	15	10	5	6 1/4	16	10 5/8	5	10 1/4	17	11 1/8
4	10 3/8	14	9 7/8	5	2 3/8	15	10 3/8	5	6 3/8	16	11	5	10 3/8	17	11 1/2
4	10 1/2	14	10 1/4	5	2 1/2	15	10 7/8	5	6 1/2	16	11 3/8	5	10 1/2	18	0
4	10 5/8	14	10 5/8	5	2 5/8	15	11 1/4	5	6 5/8	16	11 3/4	5	10 5/8	18	0 3/8
4	10 3/4	14	11	5	2 3/4	15	11 5/8	5	6 3/4	17	0 1/8	5	10 3/4	18	0 3/4
4	10 7/8	14	11 1/2	5	2 7/8	16	0	5	6 7/8	17	0 5/8	5	10 7/8	18	1 1/8
4	11	14	11 7/8	5	3	16	0 3/8	5	7	17	1	5	11	18	1 1/2
4	11 1/8	15	0 1/4	5	3 1/8	16	0 3/4	5	7 1/8	17	1 3/8	5	11 1/8	18	1 7/8
4	11 1/4	15	0 5/8	5	3 1/4	16	1 1/8	5	7 1/4	17	1 3/4	5	11 1/4	18	2 3/8
4	11 3/8	15	1	5	3 3/8	16	1 5/8	5	7 3/8	17	2 1/8	5	11 3/8	18	2 3/4
4	11 1/2	15	1 3/8	5	3 1/2	16	2	5	7 1/2	17	2 1/2	5	11 1/2	18	3 1/8
4	11 5/8	15	1 7/8	5	3 5/8	16	2 3/8	5	7 5/8	17	2 7/8	5	11 5/8	18	3 1/2
4	11 3/4	15	2 1/4	5	3 3/4	16	2 3/4	5	7 3/4	17	3 3/8	5	11 3/4	18	3 7/8
4	11 7/8	15	2 5/8	5	3 7/8	16	3 1/8	5	7 7/8	17	3 3/4	5	11 7/8	18	4 1/4
5	0	15	3	5	4	16	3 1/2	5	8	17	4 1/8	6	0	18	4 5/8
5	0 1/8	15	3 3/8	5	4 1/8	16	3 7/8	5	8 1/8	17	4 1/2	6	0 1/8	18	5
5	0 1/4	15	3 3/4	5	4 1/4	16	4 3/8	5	8 1/4	17	4 7/8	6	0 1/4	18	5 1/2
5	0 3/8	15	4 1/8	5	4 3/8	16	4 3/4	5	8 3/8	17	5 1/4	6	0 3/8	18	5 7/8
5	0 1/2	15	4 1/2	5	4 1/2	16	5 1/8	5	8 1/2	17	5 5/8	6	0 1/2	18	6 1/4
5	0 5/8	15	4 7/8	5	4 5/8	16	5 1/2	5	8 5/8	17	6	6	0 5/8	18	6 5/8
5	0 3/4	15	5 3/8	5	4 3/4	16	5 7/8	5	8 3/4	17	6 1/2	6	0 3/4	18	7
5	0 7/8	15	5 3/4	5	4 7/8	16	6 1/4	5	8 7/8	17	6 7/8	6	0 7/8	18	7 3/8

For Angle Iron measuring $\frac{7}{8}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
6	1	18	7 7/8	6	5	19	8 3/8	6	9	20	9	7	1	21	9 1/2
6	1 1/8	18	8 1/4	6	5 1/8	19	8 3/4	6	9 1/8	20	9 3/8	7	1 1/8	21	9 7/8
6	1 1/4	18	8 5/8	6	5 1/4	19	9 1/8	6	9 1/4	20	9 3/4	7	1 1/4	21	10 3/8
6	1 3/8	18	9	6	5 3/8	19	9 5/8	6	9 3/8	20	10 1/8	7	1 3/8	21	10 3/4
6	1 1/2	18	9 3/8	6	5 1/2	19	10	6	9 1/2	20	10 1/2	7	1 1/2	21	11 1/8
6	1 5/8	18	9 3/4	6	5 5/8	19	10 3/8	6	9 5/8	20	10 7/8	7	1 5/8	21	11 1/2
6	1 3/4	18	10 1/8	6	5 3/4	19	10 3/4	6	9 3/4	20	11 3/8	7	1 3/4	21	11 7/8
6	1 7/8	18	10 1/2	6	5 7/8	19	11 1/8	6	9 7/8	20	11 3/4	7	1 7/8	22	0 1/4
6	2	18	11	6	6	19	11 1/2	6	10	21	0 1/8	7	2	22	0 5/8
6	2 1/8	18	11 3/8	6	6 1/8	19	11 7/8	6	10 1/8	21	0 1/2	7	2 1/8	22	1
6	2 1/4	18	11 3/4	6	6 1/4	20	0 3/8	6	10 1/4	21	0 7/8	7	2 1/4	22	1 3/8
6	2 3/8	19	0 1/8	6	6 3/8	20	0 3/4	6	10 3/8	21	1 1/4	7	2 3/8	22	1 7/8
6	2 1/2	19	0 1/2	6	6 1/2	20	1 1/8	6	10 1/2	21	1 5/8	7	2 1/2	22	2 1/4
6	2 5/8	19	0 7/8	6	6 5/8	20	1 1/2	6	10 5/8	21	2	7	2 5/8	22	2 5/8
6	2 3/4	19	1 3/8	6	6 3/4	20	1 7/8	6	10 3/4	21	2 1/2	7	2 3/4	22	3
6	2 7/8	19	1 3/4	6	6 7/8	20	2 1/4	6	10 7/8	21	2 7/8	7	2 7/8	22	3 3/8
6	3	19	2 1/8	6	7	20	2 5/8	6	11	21	3 1/4	7	3	22	3 7/8
6	3 1/8	19	2 1/2	6	7 1/8	20	3	6	11 1/8	21	3 5/8	7	3 1/8	22	4 1/4
6	3 1/4	19	2 7/8	6	7 1/4	20	3 1/2	6	11 1/4	21	4	7	3 1/4	22	4 5/8
6	3 3/8	19	3 1/4	6	7 3/8	20	3 7/8	6	11 3/8	21	4 3/8	7	3 3/8	22	5
6	3 1/2	19	3 5/8	6	7 1/2	20	4 1/4	6	11 1/2	21	4 3/4	7	3 1/2	22	5 3/8
6	3 5/8	19	4	6	7 5/8	20	4 5/8	6	11 5/8	21	5 1/8	7	3 5/8	22	5 3/4
6	3 3/4	19	4 1/2	6	7 3/4	20	5	6	11 3/4	21	5 1/2	7	3 3/4	22	6 1/8
6	3 7/8	19	4 7/8	6	7 7/8	20	5 3/8	6	11 7/8	21	6	7	3 7/8	22	6 1/2
6	4	19	5 1/4	6	8	20	5 7/8	7	0	21	6 3/8	7	4	22	7
6	4 1/8	19	5 5/8	6	8 1/8	20	6 1/4	7	0 1/8	21	6 3/4	7	4 1/8	22	7 3/8
6	4 1/4	19	6	6	8 1/4	20	6 5/8	7	0 1/4	21	7 1/8	7	4 1/4	22	7 3/4
6	4 3/8	19	6 3/8	6	8 3/8	20	7	7	0 3/8	21	7 5/8	7	4 3/8	22	8 1/8
6	4 1/2	19	6 7/8	6	8 1/2	20	7 3/8	7	0 1/2	21	8	7	4 1/2	22	8 1/2
6	4 5/8	19	7 1/4	6	8 5/8	20	7 3/4	7	0 5/8	21	8 3/8	7	4 5/8	22	8 7/8
6	4 3/4	19	7 5/8	6	8 3/4	20	8 1/8	7	0 3/4	21	8 3/4	7	4 3/4	22	9 1/4
6	4 7/8	19	8	6	8 7/8	20	8 1/2	7	0 7/8	21	9 1/8	7	4 7/8	22	9 3/4

For ANGLE IRON measuring $\frac{1}{8}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
7	5	22	10 1/8	7	9	23	10 3/8	8	1	24	11 1/4	8	5	25	11 3/4
7	5 1/8	22	10 1/2	7	9 1/8	23	11	8	1 1/8	24	11 3/8	8	5 1/8	26	0 1/8
7	5 1/4	22	10 7/8	7	9 1/4	23	11 1/2	8	1 1/4	25	0	8	5 1/4	26	0 3/8
7	5 3/8	22	11 1/4	7	9 3/8	23	11 7/8	8	1 3/8	25	0 3/8	8	5 3/8	26	1
7	5 1/2	22	11 5/8	7	9 1/2	24	0 1/4	8	1 1/2	25	0 3/4	8	5 1/2	26	1 3/8
7	5 5/8	23	0	7	9 5/8	24	0 5/8	8	1 5/8	25	1 1/4	8	5 5/8	26	1 3/4
7	5 3/4	23	0 1/2	7	9 3/4	24	1	8	1 3/4	25	1 5/8	8	5 3/4	26	2 1/8
7	5 7/8	23	0 7/8	7	9 7/8	24	1 3/8	8	1 7/8	25	2	8	5 7/8	26	2 1/2
7	6	23	1 1/4	7	10	24	1 3/4	8	2	25	2 3/8	8	6	26	2 7/8
7	6 1/8	23	1 5/8	7	10 1/8	24	2 1/4	8	2 1/8	25	2 3/4	8	6 1/8	26	3 3/8
7	6 1/4	23	2	7	10 1/4	24	2 5/8	8	2 1/4	25	3 1/8	8	6 1/4	26	3 3/4
7	6 3/8	23	2 3/8	7	10 3/8	24	3	8	2 3/8	25	3 1/2	8	6 3/8	26	4 1/8
7	6 1/2	23	2 3/4	7	10 1/2	24	3 3/8	8	2 1/2	25	3 7/8	8	6 1/2	26	4 1/2
7	6 5/8	23	3 1/4	7	10 5/8	24	3 3/4	8	2 5/8	25	4 3/8	8	6 5/8	26	4 7/8
7	6 3/4	23	3 5/8	7	10 3/4	24	4 1/8	8	2 3/4	25	4 3/4	8	6 3/4	26	5 1/4
7	6 7/8	23	4	7	10 7/8	24	4 1/2	8	2 7/8	25	5 1/8	8	6 7/8	26	5 5/8
7	7	23	4 3/8	7	11	24	4 7/8	8	3	25	5 1/2	8	7	26	6
7	7 1/8	23	4 3/4	7	11 1/8	24	5 3/8	8	3 1/8	25	5 7/8	8	7 1/8	26	6 1/2
7	7 1/4	23	5 1/8	7	11 1/4	24	5 3/4	8	3 1/4	25	6 1/4	8	7 1/4	26	6 7/8
7	7 3/8	23	5 1/2	7	11 3/8	24	6 1/8	8	3 3/8	25	6 5/8	8	7 3/8	26	7 1/4
7	7 1/2	23	6	7	11 1/2	24	6 1/2	8	3 1/2	25	7	8	7 1/2	26	7 5/8
7	7 5/8	23	6 3/8	7	11 5/8	24	6 7/8	8	3 5/8	25	7 1/2	8	7 5/8	26	8
7	7 3/4	23	6 3/4	7	11 3/4	24	7 1/4	8	3 3/4	25	7 7/8	8	7 3/4	26	8 3/8
7	7 7/8	23	7 1/8	7	11 7/8	24	7 5/8	8	3 7/8	25	8 1/4	8	7 7/8	26	8 7/8
7	8	23	7 1/2	8	0	24	8	8	4	25	8 5/8	8	8	26	9 1/4
7	8 1/8	23	7 7/8	8	0 1/8	24	8 1/2	8	4 1/8	25	9	8	8 1/8	26	9 5/8
7	8 1/4	23	8 1/4	8	0 1/4	24	8 7/8	8	4 1/4	25	9 1/2	8	8 1/4	26	10
7	8 3/8	23	8 3/4	8	0 3/8	24	9 1/4	8	4 3/8	25	9 7/8	8	8 3/8	26	10 3/8
7	8 1/2	23	9 1/8	8	0 1/2	24	9 5/8	8	4 1/2	25	10 1/4	8	8 1/2	26	10 3/4
7	8 5/8	23	9 1/2	8	0 5/8	24	10	8	4 5/8	25	10 5/8	8	8 5/8	26	11 1/8
7	8 3/4	23	9 7/8	8	0 3/4	24	10 1/2	8	4 3/4	25	11	8	8 3/4	26	11 1/2
7	8 7/8	23	10 1/4	8	0 7/8	24	10 7/8	8	4 7/8	25	11 3/8	8	8 7/8	27	0

TABLE XVI.

For Angle Iron measuring 1 Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
0	9	1	10	1	1	2	10½	1	5	3	11⅛	1	9	4	11⅛
0	9⅛	1	10⅜	1	1⅛	2	10⅞	1	5⅛	3	11½	1	9⅛	5	0
0	9¼	1	10¾	1	1¼	2	11⅜	1	5¼	3	11⅞	1	9¼	5	0⅜
0	9⅜	1	11⅛	1	1⅜	2	11¾	1	5⅜	4	0¼	1	9⅜	5	0⅞
0	9½	1	11½	1	1½	3	0⅛	1	5½	4	0⅜	1	9½	5	1¼
0	9⅝	1	11⅞	1	1⅝	3	0½	1	5⅝	4	1	1	9⅝	5	1⅛
0	9¾	2	0⅜	1	1¾	3	0⅞	1	5¾	4	1⅜	1	9¾	5	2
0	9⅞	2	0¾	1	1⅞	3	1¼	1	5⅞	4	1⅞	1	9⅞	5	2⅜
0	10	2	1⅛	1	2	3	1⅝	1	6	4	2¼	1	10	5	2¾
0	10⅛	2	1⅜	1	2⅛	3	2	1	6⅛	4	2⅜	1	10⅛	5	3⅛
0	10¼	2	1⅞	1	2¼	3	2½	1	6¼	4	3	1	10¼	5	3⅝
0	10⅜	2	2⅜	1	2⅜	3	2⅞	1	6⅜	4	3⅜	1	10⅜	5	4
0	10½	2	2¾	1	2½	3	3⅛	1	6½	4	3¾	1	10½	5	4⅜
0	10⅝	2	3⅛	1	2⅝	3	3⅝	1	6⅝	4	4⅛	1	10⅝	5	4¾
0	10¾	2	3½	1	2¾	3	4	1	6¾	4	4½	1	10¾	5	5⅛
0	10⅞	2	3⅞	1	2⅞	3	4⅜	1	6⅞	4	5	1	10⅞	5	5½
0	11	2	4¼	1	3	3	4⅞	1	7	4	5⅜	1	11	5	5⅞
0	11⅛	2	4⅜	1	3⅛	3	5¼	1	7⅛	4	5¾	1	11⅛	5	6⅜
0	11¼	2	5	1	3¼	3	5⅜	1	7¼	4	6⅛	1	11¼	5	6¾
0	11⅜	2	5½	1	3⅜	3	6	1	7⅜	4	6½	1	11⅜	5	7⅛
0	11½	2	5⅞	1	3½	3	6⅜	1	7½	4	7	1	11½	5	7½
0	11⅝	2	6¼	1	3⅝	3	6¾	1	7⅝	4	7⅜	1	11⅝	5	8
0	11¾	2	6⅜	1	3¾	3	7⅛	1	7¾	4	7¾	1	11¾	5	8⅜
0	11⅞	2	7	1	3⅞	3	7⅜	1	7⅞	4	8⅛	1	11⅞	5	8¾
1	0	2	7⅜	1	4	3	8	1	8	4	8½	2	0	5	9⅛
1	0⅛	2	7¾	1	4⅛	3	8⅜	1	8⅛	4	8⅞	2	0⅛	5	9½
1	0¼	2	8¼	1	4¼	3	8¾	1	8¼	4	9¼	2	0¼	5	9⅞
1	0⅜	2	8⅝	1	4⅜	3	9⅛	1	8⅜	4	9⅝	2	0⅜	5	10¼
1	0½	2	9	1	4½	3	9½	1	8½	4	10⅛	2	0½	5	10⅝
1	0⅝	2	9⅜	1	4⅝	3	9⅞	1	8⅝	4	10½	2	0⅝	5	11
1	0¾	2	9¾	1	4¾	3	10⅜	1	8¾	4	10⅞	2	0¾	5	11½
1	0⅞	2	10⅛	1	4⅞	3	10¾	1	8⅞	4	11¼	2	0⅞	5	11⅞

For Angle Iron measuring 1 Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
2	1	6	0 1/4	2	5	7	0 3/4	2	9	8	1 3/8	3	1	9	1 7/8
2	1 1/8	6	0 5/8	2	5 1/8	7	1 1/8	2	9 1/8	8	1 3/4	3	1 1/8	9	2 3/8
2	1 1/4	6	1	2	5 1/4	7	1 1/2	2	9 1/4	8	2 1/8	3	1 1/4	9	2 3/4
2	1 3/8	6	1 3/8	2	5 3/8	7	2	2	9 3/8	8	2 1/2	3	1 3/8	9	3 1/8
2	1 1/2	6	1 3/4	2	5 1/2	7	2 3/8	2	9 1/2	8	2 7/8	3	1 1/2	9	3 1/2
2	1 5/8	6	2 1/4	2	5 5/8	7	2 3/4	2	9 5/8	8	3 3/8	3	1 5/8	9	3 7/8
2	1 3/4	6	2 5/8	2	5 3/4	7	3 1/8	2	9 3/4	8	3 3/4	3	1 3/4	9	4 1/4
2	1 7/8	6	3	2	5 7/8	7	3 1/2	2	9 7/8	8	4 1/8	3	1 7/8	9	4 5/8
2	2	6	3 3/8	2	6	7	3 7/8	2	10	8	4 1/2	3	2	9	5
2	2 1/8	6	3 3/4	2	6 1/8	7	4 1/8	2	10 1/8	8	4 7/8	3	2 1/8	9	5 1/3
2	2 1/4	6	4 1/8	2	6 1/4	7	4 1/4	2	10 1/4	8	5 1/4	3	2 1/4	9	5 7/8
2	2 3/8	6	4 1/8	2	6 3/8	7	5 1/8	2	10 3/8	8	5 5/8	3	2 3/8	9	6 1/4
2	2 1/3	6	4 7/8	2	6 1/2	7	5 1/2	2	10 1/2	8	6	3	2 1/2	9	6 5/8
2	2 5/8	6	5 3/8	2	6 5/8	7	5 7/8	2	10 5/8	8	6 1/2	3	2 5/8	9	7
2	2 3/4	6	5 3/4	2	6 3/4	7	6 1/4	2	10 3/4	8	6 7/8	3	2 3/4	9	7 3/8
2	2 7/8	6	6 1/8	2	6 7/8	7	6 5/8	2	10 7/8	8	7 1/4	3	2 7/8	9	7 7/8
2	3	6	6 1/2	2	7	7	7	2	11	8	7 5/8	3	3	9	8 1/4
2	3 1/8	6	6 7/8	2	7 1/8	7	7 1/2	2	11 1/8	8	8	3	3 1/8	9	8 5/8
2	3 1/4	6	7 1/4	2	7 1/4	7	7 7/8	2	11 1/4	8	8 3/8	3	3 1/4	9	9
2	3 3/8	6	7 5/8	2	7 3/8	7	8 1/4	2	11 3/8	8	8 7/8	3	3 3/8	9	9 3/8
2	3 1/3	6	8 1/8	2	7 1/2	7	8 5/8	2	11 1/2	8	9 1/4	3	3 1/2	9	9 3/4
2	3 5/8	6	8 1/2	2	7 5/8	7	9	2	11 5/8	8	9 5/8	3	3 5/8	9	10 1/8
2	3 3/4	6	8 7/8	2	7 3/4	7	9 3/8	2	11 3/4	8	10	3	3 3/4	9	10 1/2
2	3 7/8	6	9 1/4	2	7 7/8	7	9 3/4	2	11 7/8	8	10 3/8	3	3 7/8	9	10 7/8
2	4	6	9 5/8	2	8	7	10 1/4	3	0	8	10 3/4	3	4	9	11 3/8
2	4 1/8	6	10	2	8 1/8	7	10 5/8	3	0 1/8	8	11 1/8	3	4 1/8	9	11 3/4
2	4 1/4	6	10 1/8	2	8 1/4	7	11	3	0 1/4	8	11 1/8	3	4 1/4	10	0 1/8
2	4 3/8	6	10 7/8	2	8 3/8	7	11 3/8	3	0 3/8	9	0	3	4 3/8	10	0 1/2
2	4 1/3	6	11 1/4	2	8 1/3	7	11 3/4	3	0 1/3	9	0 3/8	3	4 1/3	10	0 7/8
2	4 5/8	6	11 5/8	2	8 5/8	8	0 1/8	3	0 5/8	9	0 3/4	3	4 5/8	10	1 3/8
2	4 3/4	7	0	2	8 3/4	8	0 1/2	3	0 3/4	9	1 1/8	3	4 3/4	10	1 1/4
2	4 7/8	7	0 3/8	2	8 7/8	8	1	3	0 7/8	9	1 1/2	3	4 7/8	10	2 1/8

For Angle Iron measuring 1 Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
3	5	10	2½	3	9	11	3	4	1	12	3⅝	4	5	13	4¼
3	5⅛	10	2⅞	3	9⅛	11	3½	4	1⅛	12	4	4	5⅛	13	4⅜
3	5¼	10	3¼	3	9¼	11	3⅞	4	1¼	12	4⅜	4	5¼	13	5
3	5⅜	10	3⅝	3	9⅜	11	4¼	4	1⅜	12	4¼	4	5⅜	13	5⅛
3	5½	10	4	3	9½	11	4⅜	4	1½	12	5¼	4	5½	13	5¾
3	5⅝	10	4½	3	9⅝	11	5	4	1⅝	12	5⅝	4	5⅝	13	6⅜
3	5¾	10	4⅞	3	9¾	11	5⅜	4	1¾	12	6	4	5¾	13	6½
3	5⅞	10	5¼	3	9⅞	11	5¾	4	1⅞	12	6⅜	4	5⅞	13	7
3	6	10	5⅝	3	10	11	6¼	4	2	12	6¾	4	6	13	7⅜
3	6⅛	10	6	3	10⅛	11	6⅝	4	2⅛	12	7⅛	4	6⅛	13	7¾
3	6¼	10	6⅜	3	10¼	11	7	4	2¼	12	7½	4	6¼	13	8⅛
3	6⅜	10	6⅞	3	10⅜	11	7⅜	4	2⅜	12	7⅞	4	6⅜	13	8½
3	6½	10	7¼	3	10½	11	7¾	4	2½	12	8⅜	4	6½	13	8⅞
3	6⅝	10	7⅝	3	10⅝	11	8⅛	4	2⅝	12	8¾	4	6⅝	13	9¼
3	6¾	10	8	3	10¾	11	8½	4	2¾	12	9⅛	4	6¾	13	9⅝
3	6⅞	10	8⅜	3	10⅞	11	8⅞	4	2⅞	12	9½	4	6⅞	13	10⅛
3	7	10	8¾	3	11	11	9⅜	4	3	12	9⅞	4	7	13	10½
3	7⅛	10	9⅛	3	11⅛	11	9¾	4	3⅛	12	10⅜	4	7⅛	13	10⅞
3	7¼	10	9½	3	11¼	11	10⅛	4	3¼	12	10¾	4	7¼	13	11¼
3	7⅜	10	9⅞	3	11⅜	11	10½	4	3⅜	12	11⅛	4	7⅜	13	11⅝
3	7½	10	10⅜	3	11½	11	10⅞	4	3½	12	11½	4	7½	14	0
3	7⅝	10	10¾	3	11⅝	11	11¼	4	3⅝	12	11⅞	4	7⅝	14	0⅜
3	7¾	10	11⅛	3	11¾	11	11⅝	4	3¾	13	0¼	4	7¾	14	0⅞
3	7⅞	10	11½	3	11⅞	12	0⅛	4	3⅞	13	0⅝	4	7⅞	14	1¼
3	8	10	11⅞	4	0	12	0½	4	4	13	1	4	8	14	1⅝
3	8⅛	11	0⅜	4	0⅛	12	0⅞	4	4⅛	13	1½	4	8⅛	14	2
3	8¼	11	0¾	4	0¼	12	1¼	4	4¼	13	1⅞	4	8¼	14	2⅜
3	8⅜	11	1⅛	4	0⅜	12	1⅝	4	4⅜	13	2¼	4	8⅜	14	2¾
3	8½	11	1½	4	0½	12	2	4	4½	13	2⅝	4	8½	14	3⅛
3	8⅝	11	1⅞	4	0⅝	12	2⅜	4	4⅝	13	3	4	8⅝	14	3½
3	8¾	11	2¼	4	0¾	12	2⅞	4	4¾	13	3⅜	4	8¾	14	4
3	8⅞	11	2⅝	4	0⅞	12	3¼	4	4⅞	13	3¾	4	8⅞	14	4⅜

For Angle Iron measuring 1 Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN
4	9	14	4¾	5	1	15	5⅜	5	5	16	5⅞	5	9	17	6½
4	9⅛	14	5⅛	5	1⅛	15	5¾	5	5⅛	16	6¼	5	9⅛	17	6⅝
4	9¼	14	5½	5	1¼	15	6⅛	5	5¼	16	6⅜	5	9¼	17	7¼
4	9⅜	14	5⅞	5	1⅜	15	6½	5	5⅜	16	7	5	9⅜	17	7⅝
4	9½	14	6⅜	5	1½	15	6⅞	5	5½	16	7⅛	5	9½	17	8
4	9⅝	14	6¾	5	1⅝	15	7¼	5	5⅝	16	7⅜	5	9⅝	17	8⅜
4	9¾	14	7⅛	5	1¾	15	7¾	5	5¾	16	8¼	5	9¾	17	8⅞
4	9⅞	14	7½	5	1⅞	15	8⅛	5	5⅞	16	8⅝	5	9⅞	17	9¼
4	10	14	7⅞	5	2	15	8½	5	6	16	9	5	10	17	9⅝
4	10⅛	14	8¼	5	2⅛	15	8⅞	5	6⅛	16	9⅜	5	10⅛	17	10
4	10¼	14	8¾	5	2¼	15	9¼	5	6¼	16	9⅞	5	10¼	17	10⅜
4	10⅜	14	9⅛	5	2⅜	15	9⅝	5	6⅜	16	10¼	5	10⅜	17	10¾
4	10½	14	9½	5	2½	15	10	5	6½	16	10⅝	5	10½	17	11⅛
4	10⅝	14	9⅞	5	2⅝	15	10⅜	5	6⅝	16	11	5	10⅝	17	11½
4	10¾	14	10¼	5	2¾	15	10⅞	5	6¾	16	11⅜	5	10¾	18	0
4	10⅞	14	10⅝	5	2⅞	15	11¼	5	6⅞	16	11¾	5	10⅞	18	0⅜
4	11	14	11	5	3	15	11⅝	5	7	17	0⅛	5	11	18	0¾
4	11⅛	14	11⅜	5	3⅛	16	0	5	7⅛	17	0⅝	5	11⅛	18	1⅛
4	11¼	14	11⅞	5	3¼	16	0⅜	5	7¼	17	1	5	11¼	18	1½
4	11⅜	15	0¼	5	3⅜	16	0¾	5	7⅜	17	1⅜	5	11⅜	18	1⅞
4	11½	15	0⅝	5	3½	16	1⅛	5	7½	17	1¾	5	11½	18	2⅜
4	11⅝	15	1	5	3⅝	16	1⅝	5	7⅝	17	2⅛	5	11⅝	18	2¾
4	11¾	15	1⅜	5	3¾	16	2	5	7¾	17	2½	5	11¾	18	3⅛
4	11⅞	15	1⅞	5	3⅞	16	2⅜	5	7⅞	17	2⅞	5	11⅞	18	3½
5	0	15	2¼	5	4	16	2¾	5	8	17	3⅜	6	0	18	3⅞
5	0⅛	15	2⅝	5	4⅛	16	3⅛	5	8⅛	17	3¾	6	0⅛	18	4¼
5	0¼	15	3	5	4¼	16	3½	5	8¼	17	4⅛	6	0¼	18	4⅝
5	0⅜	15	3⅜	5	4⅜	16	3⅞	5	8⅜	17	4½	6	0⅜	18	5
5	0½	15	3¾	5	4½	16	4⅜	5	8½	17	4⅞	6	0½	18	5½
5	0⅝	15	4⅛	5	4⅝	16	4¾	5	8⅝	17	5¼	6	0⅝	18	5⅞
5	0¾	15	4½	5	4¾	16	5⅛	5	8¾	17	5⅝	6	0¾	18	6¼
5	0⅞	15	4⅞	5	4⅞	16	5½	5	8⅞	17	6	6	0⅞	18	6⅝

For Angle Iron measuring 1 Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
6	1	18	7	6	5	19	7⅝	6	9	20	8⅛	7	1	21	8¾
6	1⅛	18	7⅜	6	5⅛	19	8	6	9⅛	20	8½	7	1⅛	21	9⅛
6	1¼	18	7⅞	6	5¼	19	8⅜	6	9¼	20	9	7	1¼	21	9½
6	1⅜	18	8¼	6	5⅜	19	8¾	6	9⅜	20	9⅜	7	1⅜	21	9⅞
6	1½	18	8⅝	6	5½	19	9⅛	6	9½	20	9¾	7	1½	21	10⅜
6	1⅝	18	9	6	5⅝	19	9⅝	6	9⅝	20	10⅛	7	1⅝	21	10¾
6	1¾	18	9⅜	6	5¾	19	10	6	9¾	20	10½	7	1¾	21	11⅛
6	1⅞	18	9¾	6	5⅞	19	10⅜	6	9⅞	20	10⅞	7	1⅞	21	11½
6	2	18	10⅛	6	6	19	10¾	6	10	20	11⅜	7	2	21	11⅞
6	2⅛	18	10½	6	6⅛	19	11⅛	6	10⅛	20	11¾	7	2⅛	22	0¼
6	2¼	18	11	6	6¼	19	11½	6	10¼	21	0⅛	7	2¼	22	0⅝
6	2⅜	18	11⅜	6	6⅜	19	11⅞	6	10⅜	21	0½	7	2⅜	22	1
6	2½	18	11¾	6	6½	20	0⅜	6	10½	21	0⅞	7	2½	22	1½
6	2⅝	19	0⅛	6	6⅝	20	0¾	6	10⅝	21	1¼	7	2⅝	22	1⅞
6	2¾	19	0½	6	6¾	20	1⅛	6	10¾	21	1⅝	7	2¾	22	2¼
6	2⅞	19	0⅞	6	6⅞	20	1½	6	10⅞	21	2	7	2⅞	22	2⅝
6	3	19	1⅜	6	7	20	1⅞	6	11	21	2½	7	3	22	3
6	3⅛	19	1¾	6	7⅛	20	2¼	6	11⅛	21	2⅞	7	3⅛	22	3⅜
6	3¼	19	2⅛	6	7¼	20	2⅝	6	11¼	21	3¼	7	3¼	22	3⅞
6	3⅜	19	2½	6	7⅜	20	3	6	11⅜	21	3⅝	7	3⅜	22	4¼
6	3½	19	2⅞	6	7½	20	3½	6	11½	21	4	7	3½	22	4⅝
6	3⅝	19	3¼	6	7⅝	20	3⅞	6	11⅝	21	4⅜	7	3⅝	22	5
6	3¾	19	3⅝	6	7¾	20	4¼	6	11¾	21	4¾	7	3¾	22	5⅜
6	3⅞	19	4	6	7⅞	20	4⅝	6	11⅞	21	5⅛	7	3⅞	22	5¾
6	4	19	4½	6	8	20	5	7	0	21	5½	7	4	22	6⅛
6	4⅛	19	4⅞	6	8⅛	20	5⅜	7	0⅛	21	6	7	4⅛	22	6⅓
6	4¼	19	5¼	6	8¼	20	5⅞	7	0¼	21	6⅜	7	4¼	22	7
6	4⅜	19	5⅝	6	8⅜	20	6¼	7	0⅜	21	6¾	7	4⅜	22	7⅜
6	4½	19	6	6	8½	20	6⅝	7	0½	21	7⅛	7	4½	22	7¾
6	4⅝	19	6⅜	6	8⅝	20	7	7	0⅝	21	7⅝	7	4⅝	22	8⅛
6	4¾	19	6⅞	6	8¾	20	7⅜	7	0¾	21	8	7	4¾	22	8¼
6	4⅞	19	7¼	6	8⅞	20	7¾	7	0⅞	21	8⅜	7	4⅞	22	8⅝

For Angle Iron measuring 1 Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN
7	5	22	9¼	7	9	23	9⅞	8	1	24	10½	8	5	25	11
7	5⅛	22	9¾	7	9⅛	23	10¼	8	1⅛	24	10⅞	8	5⅛	25	11⅜
7	5¼	22	10⅛	7	9¼	23	10⅝	8	1¼	24	11¼	8	5¼	25	11¾
7	5⅜	22	10½	7	9⅜	23	11	8	1⅜	24	11⅝	8	5⅜	26	0⅛
7	5½	22	10⅞	7	9½	23	11½	8	1½	25	0	8	5½	26	0⅝
7	5⅝	22	11¼	7	9⅝	23	11⅞	8	1⅝	25	0⅜	8	5⅝	26	1
7	5¾	22	11⅝	7	9¾	24	0¼	8	1¾	25	0¾	8	5¾	26	1⅜
7	5⅞	23	0	7	9⅞	24	0⅝	8	1⅞	25	1¼	8	5⅞	26	1¾
7	6	23	0½	7	10	24	1	8	2	25	1⅝	8	6	26	2⅛
7	6⅛	23	0⅞	7	10⅛	24	1⅜	8	2⅛	25	2	8	6⅛	26	2½
7	6¼	23	1¼	7	10¼	24	1¾	8	2¼	25	2⅜	8	6¼	26	2⅞
7	6⅜	23	1⅝	7	10⅜	24	2¼	8	2⅜	25	2¾	8	6⅜	26	3⅜
7	6½	23	2	7	10½	24	2⅝	8	2½	25	3⅛	8	6½	26	3¾
7	6⅝	23	2⅜	7	10⅝	24	3	8	2⅝	25	3½	8	6⅝	26	4⅛
7	6¾	23	2¾	7	10¾	24	3⅜	8	2¾	25	3⅞	8	6¾	26	4½
7	6⅞	23	3¼	7	10⅞	24	3¾	8	2⅞	25	4⅜	8	6⅞	26	4⅞
7	7	23	3⅝	7	11	24	4⅛	8	3	25	4¾	8	7	26	5¼
7	7⅛	23	4	7	11⅛	24	4½	8	3⅛	25	5⅛	8	7⅛	26	5⅝
7	7¼	23	4⅜	7	11¼	24	4⅞	8	3¼	25	5½	8	7¼	26	6
7	7⅜	23	4¾	7	11⅜	24	5⅜	8	3⅜	25	5⅞	8	7⅜	26	6⅜
7	7½	23	5⅛	7	11½	24	5¾	8	3½	25	6¼	8	7½	26	6⅞
7	7⅝	23	5½	7	11⅝	24	6⅛	8	3⅝	25	6⅝	8	7⅝	26	7¼
7	7¾	23	6	7	11¾	24	6½	8	3¾	25	7	8	7¾	26	7⅝
7	7⅞	23	6⅜	7	11⅞	24	6⅞	8	3⅞	25	7½	8	7⅞	26	8
7	8	23	6¾	8	0	24	7¼	8	4	25	7⅞	8	8	26	8⅜
7	8⅛	23	7⅛	8	0⅛	24	7⅝	8	4⅛	25	8¼	8	8⅛	26	8⅞
7	8¼	23	7½	8	0¼	24	8	8	4¼	25	8⅝	8	8¼	26	9¼
7	8⅜	23	7⅞	8	0⅜	24	8½	8	4⅜	25	9	8	8⅜	26	9⅝
7	8½	23	8¼	8	0½	24	8⅞	8	4½	25	9½	8	8½	26	10
7	8⅝	23	8¾	8	0⅝	24	9¼	8	4⅝	25	9⅞	8	8⅝	26	10⅜
7	8¾	23	9⅛	8	0¾	24	9⅝	8	4¾	25	10¼	8	8¾	26	10¾
7	8⅞	23	9½	8	0⅞	24	10	8	4⅞	25	10⅝	8	8⅞	26	11⅛

TABLÆ XVII.

For Angle Iron measuring $1\frac{1}{8}$ of an Inch thick, diagonally across the root. 55

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
0	9	1	$9\frac{1}{8}$	1	1	2	$9\frac{3}{4}$	1	5	3	$10\frac{3}{8}$	1	9	4	$10\frac{7}{8}$
0	$9\frac{1}{8}$	1	$9\frac{1}{2}$	1	$1\frac{1}{8}$	2	$10\frac{1}{8}$	1	$5\frac{1}{8}$	3	$10\frac{3}{4}$	1	$9\frac{1}{8}$	4	$11\frac{1}{8}$
0	$9\frac{1}{4}$	1	10	1	$1\frac{1}{4}$	2	$10\frac{1}{2}$	1	$5\frac{1}{4}$	3	$11\frac{1}{8}$	1	$9\frac{1}{4}$	4	$11\frac{5}{8}$
0	$9\frac{3}{8}$	1	$10\frac{3}{8}$	1	$1\frac{3}{8}$	2	$10\frac{7}{8}$	1	$5\frac{3}{8}$	3	$11\frac{1}{2}$	1	$9\frac{3}{8}$	5	0
0	$9\frac{1}{2}$	1	$10\frac{3}{4}$	1	$1\frac{1}{2}$	2	$11\frac{3}{8}$	1	$5\frac{1}{2}$	3	$11\frac{7}{8}$	1	$9\frac{1}{2}$	5	$0\frac{3}{8}$
0	$9\frac{5}{8}$	1	$11\frac{1}{8}$	1	$1\frac{5}{8}$	2	$11\frac{3}{4}$	1	$5\frac{5}{8}$	4	$0\frac{1}{4}$	1	$9\frac{5}{8}$	5	$0\frac{7}{8}$
0	$9\frac{3}{4}$	1	$11\frac{1}{2}$	1	$1\frac{3}{4}$	3	$0\frac{1}{8}$	1	$5\frac{3}{4}$	4	$0\frac{5}{8}$	1	$9\frac{3}{4}$	5	$1\frac{1}{4}$
0	$9\frac{7}{8}$	1	$11\frac{7}{8}$	1	$1\frac{7}{8}$	3	$0\frac{1}{2}$	1	$5\frac{7}{8}$	4	1	1	$9\frac{7}{8}$	5	$1\frac{5}{8}$
0	10	2	$0\frac{3}{8}$	1	2	3	$0\frac{7}{8}$	1	6	4	$1\frac{3}{8}$	1	10	5	2
0	$10\frac{1}{8}$	2	$0\frac{3}{4}$	1	$2\frac{1}{8}$	3	$1\frac{1}{4}$	1	$6\frac{1}{8}$	4	$1\frac{7}{8}$	1	$10\frac{1}{8}$	5	$2\frac{3}{8}$
0	$10\frac{1}{4}$	2	$1\frac{1}{8}$	1	$2\frac{1}{4}$	3	$1\frac{5}{8}$	1	$6\frac{1}{4}$	4	$2\frac{1}{4}$	1	$10\frac{1}{4}$	5	$2\frac{3}{4}$
0	$10\frac{3}{8}$	2	$1\frac{1}{2}$	1	$2\frac{3}{8}$	3	2	1	$6\frac{3}{8}$	4	$2\frac{5}{8}$	1	$10\frac{3}{8}$	5	$3\frac{1}{8}$
0	$10\frac{1}{2}$	2	$1\frac{7}{8}$	1	$2\frac{1}{2}$	3	$2\frac{1}{2}$	1	$6\frac{1}{2}$	4	3	1	$10\frac{1}{2}$	5	$3\frac{5}{8}$
0	$10\frac{5}{8}$	2	$2\frac{3}{8}$	1	$2\frac{5}{8}$	3	$2\frac{7}{8}$	1	$6\frac{5}{8}$	4	$3\frac{3}{8}$	1	$10\frac{5}{8}$	5	4
0	$10\frac{3}{4}$	2	$2\frac{3}{4}$	1	$2\frac{3}{4}$	3	$3\frac{1}{4}$	1	$6\frac{3}{4}$	4	$3\frac{3}{4}$	1	$10\frac{3}{4}$	5	$4\frac{3}{8}$
0	$10\frac{7}{8}$	2	$3\frac{1}{8}$	1	$2\frac{7}{8}$	3	$3\frac{5}{8}$	1	$6\frac{7}{8}$	4	$4\frac{1}{8}$	1	$10\frac{7}{8}$	5	$4\frac{3}{4}$
0	11	2	$3\frac{1}{2}$	1	3	3	4	1	7	4	$4\frac{1}{2}$	1	11	5	$5\frac{1}{8}$
0	$11\frac{1}{8}$	2	$3\frac{7}{8}$	1	$3\frac{1}{8}$	3	$4\frac{3}{8}$	1	$7\frac{1}{8}$	4	5	1	$11\frac{1}{8}$	5	$5\frac{1}{2}$
0	$11\frac{1}{4}$	2	$4\frac{1}{4}$	1	$3\frac{1}{4}$	3	$4\frac{7}{8}$	1	$7\frac{1}{4}$	4	$5\frac{3}{8}$	1	$11\frac{1}{4}$	5	$5\frac{7}{8}$
0	$11\frac{3}{8}$	2	$4\frac{5}{8}$	1	$3\frac{3}{8}$	3	$5\frac{1}{4}$	1	$7\frac{3}{8}$	4	$5\frac{3}{4}$	1	$11\frac{3}{8}$	5	$6\frac{3}{8}$
0	$11\frac{1}{2}$	2	5	1	$3\frac{1}{2}$	3	$5\frac{5}{8}$	1	$7\frac{1}{2}$	4	$6\frac{1}{8}$	1	$11\frac{1}{2}$	5	$6\frac{3}{4}$
0	$11\frac{5}{8}$	2	$5\frac{1}{2}$	1	$3\frac{5}{8}$	3	6	1	$7\frac{5}{8}$	4	$6\frac{1}{2}$	1	$11\frac{5}{8}$	5	$7\frac{1}{8}$
0	$11\frac{3}{4}$	2	$5\frac{7}{8}$	1	$3\frac{3}{4}$	3	$6\frac{3}{8}$	1	$7\frac{3}{4}$	4	7	1	$11\frac{3}{4}$	5	$7\frac{1}{2}$
0	$11\frac{7}{8}$	2	$6\frac{1}{4}$	1	$3\frac{7}{8}$	3	$6\frac{3}{4}$	1	$7\frac{7}{8}$	4	$7\frac{3}{8}$	1	$11\frac{7}{8}$	5	8
1	0	2	$6\frac{5}{8}$	1	4	3	$7\frac{1}{8}$	1	8	4	$7\frac{3}{4}$	2	0	5	$8\frac{3}{8}$
1	$0\frac{1}{8}$	2	7	1	$4\frac{1}{8}$	3	$7\frac{5}{8}$	1	$8\frac{1}{8}$	4	$8\frac{1}{8}$	2	$0\frac{1}{8}$	5	$8\frac{3}{4}$
1	$0\frac{1}{4}$	2	$7\frac{3}{8}$	1	$4\frac{1}{4}$	3	8	1	$8\frac{1}{4}$	4	$8\frac{1}{2}$	2	$0\frac{1}{4}$	5	$9\frac{1}{8}$
1	$0\frac{3}{8}$	2	$7\frac{3}{4}$	1	$4\frac{3}{8}$	3	$8\frac{3}{8}$	1	$8\frac{3}{8}$	4	$8\frac{7}{8}$	2	$0\frac{3}{8}$	5	$9\frac{1}{2}$
1	$0\frac{1}{2}$	2	$8\frac{1}{4}$	1	$4\frac{1}{2}$	3	$8\frac{3}{4}$	1	$8\frac{1}{2}$	4	$9\frac{1}{4}$	2	$0\frac{1}{2}$	5	$9\frac{7}{8}$
1	$0\frac{5}{8}$	2	$8\frac{5}{8}$	1	$4\frac{5}{8}$	3	$9\frac{1}{8}$	1	$8\frac{5}{8}$	4	$9\frac{5}{8}$	2	$0\frac{5}{8}$	5	$10\frac{1}{4}$
1	$0\frac{3}{4}$	2	9	1	$4\frac{3}{4}$	3	$9\frac{1}{2}$	1	$8\frac{3}{4}$	4	10	2	$0\frac{3}{4}$	5	$10\frac{5}{8}$
1	$0\frac{7}{8}$	2	$9\frac{3}{8}$	1	$4\frac{7}{8}$	3	$9\frac{7}{8}$	1	$8\frac{7}{8}$	4	$10\frac{1}{2}$	2	$0\frac{7}{8}$	5	11

For Angle Iron measuring $1\frac{1}{8}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
2	1	5	$11\frac{1}{2}$	2	5	7	0	2	9	8	$0\frac{1}{2}$	3	1	9	$1\frac{1}{8}$
2	$1\frac{1}{8}$	5	$11\frac{7}{8}$	2	$5\frac{1}{8}$	7	$0\frac{3}{8}$	2	$9\frac{1}{8}$	8	1	3	$1\frac{1}{8}$	9	$1\frac{1}{2}$
2	$1\frac{1}{4}$	6	$0\frac{1}{4}$	2	$5\frac{1}{4}$	7	$0\frac{3}{4}$	2	$9\frac{1}{4}$	8	$1\frac{1}{8}$	3	$1\frac{1}{4}$	9	$1\frac{7}{8}$
2	$1\frac{3}{8}$	6	$0\frac{5}{8}$	2	$5\frac{7}{8}$	7	$1\frac{1}{8}$	2	$9\frac{3}{8}$	8	$1\frac{3}{4}$	3	$1\frac{3}{8}$	9	$2\frac{3}{8}$
2	$1\frac{1}{2}$	6	1	2	$5\frac{1}{2}$	7	$1\frac{1}{2}$	2	$9\frac{1}{2}$	8	$2\frac{1}{8}$	3	$1\frac{1}{2}$	9	$2\frac{3}{4}$
2	$1\frac{5}{8}$	6	$1\frac{3}{8}$	2	$5\frac{5}{8}$	7	2	2	$9\frac{5}{8}$	8	$2\frac{1}{2}$	3	$1\frac{3}{8}$	9	$3\frac{1}{8}$
2	$1\frac{3}{4}$	6	$1\frac{3}{4}$	2	$5\frac{3}{4}$	7	$2\frac{3}{8}$	2	$9\frac{3}{4}$	8	$2\frac{7}{8}$	3	$1\frac{3}{4}$	9	$3\frac{1}{2}$
2	$1\frac{7}{8}$	6	$2\frac{1}{4}$	2	$5\frac{7}{8}$	7	$2\frac{3}{4}$	2	$9\frac{7}{8}$	8	$3\frac{3}{8}$	3	$1\frac{7}{8}$	9	$3\frac{7}{8}$
2	2	6	$2\frac{5}{8}$	2	6	7	$3\frac{1}{8}$	2	10	8	$3\frac{3}{4}$	3	2	9	$4\frac{1}{4}$
2	$2\frac{1}{8}$	6	3	2	$6\frac{1}{8}$	7	$3\frac{1}{2}$	2	$10\frac{1}{8}$	8	$4\frac{1}{8}$	3	$2\frac{1}{8}$	9	$4\frac{5}{8}$
2	$2\frac{1}{4}$	6	$3\frac{3}{8}$	2	$6\frac{1}{4}$	7	$3\frac{7}{8}$	2	$10\frac{1}{4}$	8	$4\frac{1}{2}$	3	$2\frac{1}{4}$	9	5
2	$2\frac{3}{8}$	6	$3\frac{3}{4}$	2	$6\frac{3}{8}$	7	$4\frac{3}{8}$	2	$10\frac{3}{8}$	8	$4\frac{7}{8}$	3	$2\frac{3}{8}$	9	$5\frac{1}{8}$
2	$2\frac{1}{2}$	6	$4\frac{1}{8}$	2	$6\frac{1}{2}$	7	$4\frac{3}{4}$	2	$10\frac{1}{2}$	8	$5\frac{1}{4}$	3	$2\frac{1}{2}$	9	$5\frac{7}{8}$
2	$2\frac{5}{8}$	6	$4\frac{1}{2}$	2	$6\frac{5}{8}$	7	$5\frac{1}{8}$	2	$10\frac{5}{8}$	8	$5\frac{5}{8}$	3	$2\frac{5}{8}$	9	$6\frac{1}{4}$
2	$2\frac{3}{4}$	6	$4\frac{7}{8}$	2	$6\frac{3}{4}$	7	$5\frac{1}{2}$	2	$10\frac{3}{4}$	8	6	3	$2\frac{3}{4}$	9	$6\frac{5}{8}$
2	$2\frac{7}{8}$	6	$5\frac{3}{8}$	2	$6\frac{7}{8}$	7	$5\frac{7}{8}$	2	$10\frac{7}{8}$	8	$6\frac{3}{8}$	3	$2\frac{7}{8}$	9	7
2	3	6	$5\frac{3}{4}$	2	7	7	$6\frac{1}{4}$	2	11	8	$6\frac{3}{4}$	3	3	9	$7\frac{3}{8}$
2	$3\frac{1}{8}$	6	$6\frac{1}{8}$	2	$7\frac{1}{8}$	7	$6\frac{3}{8}$	2	$11\frac{1}{8}$	8	$7\frac{1}{4}$	3	$3\frac{1}{8}$	9	$7\frac{7}{8}$
2	$3\frac{1}{4}$	6	$6\frac{1}{2}$	2	$7\frac{1}{4}$	7	7	2	$11\frac{1}{4}$	8	$7\frac{5}{8}$	3	$3\frac{1}{4}$	9	$8\frac{1}{4}$
2	$3\frac{3}{8}$	6	$6\frac{7}{8}$	2	$7\frac{3}{8}$	7	$7\frac{1}{8}$	2	$11\frac{3}{8}$	8	8	3	$3\frac{3}{8}$	9	$8\frac{5}{8}$
2	$3\frac{1}{2}$	6	$7\frac{1}{4}$	2	$7\frac{1}{2}$	7	$7\frac{3}{8}$	2	$11\frac{1}{2}$	8	$8\frac{3}{8}$	3	$3\frac{1}{2}$	9	9
2	$3\frac{5}{8}$	6	$7\frac{5}{8}$	2	$7\frac{5}{8}$	7	$8\frac{1}{4}$	2	$11\frac{5}{8}$	8	$8\frac{7}{8}$	3	$3\frac{5}{8}$	9	$9\frac{3}{8}$
2	$3\frac{3}{4}$	6	$8\frac{1}{8}$	2	$7\frac{3}{4}$	7	$8\frac{5}{8}$	2	$11\frac{3}{4}$	8	$9\frac{1}{4}$	3	$3\frac{3}{4}$	9	$9\frac{3}{4}$
2	$3\frac{7}{8}$	6	$8\frac{1}{2}$	2	$7\frac{7}{8}$	7	9	2	$11\frac{7}{8}$	8	$9\frac{5}{8}$	3	$3\frac{7}{8}$	9	$10\frac{1}{8}$
2	4	6	$8\frac{7}{8}$	2	8	7	$9\frac{3}{8}$	3	0	8	10	3	4	9	$10\frac{1}{2}$
2	$4\frac{1}{8}$	6	$9\frac{1}{4}$	2	$8\frac{1}{8}$	7	$9\frac{3}{4}$	3	$0\frac{1}{8}$	8	$10\frac{3}{8}$	3	$4\frac{1}{8}$	9	$10\frac{7}{8}$
2	$4\frac{1}{4}$	6	$9\frac{5}{8}$	2	$8\frac{1}{4}$	7	$10\frac{1}{4}$	3	$0\frac{1}{4}$	8	$10\frac{7}{8}$	3	$4\frac{1}{4}$	9	$11\frac{3}{8}$
2	$4\frac{3}{8}$	6	10	2	$8\frac{3}{8}$	7	$10\frac{5}{8}$	3	$0\frac{3}{8}$	8	$11\frac{3}{8}$	3	$4\frac{3}{8}$	9	$11\frac{3}{4}$
2	$4\frac{1}{2}$	6	$10\frac{1}{2}$	2	$8\frac{1}{2}$	7	11	3	$0\frac{1}{2}$	8	$11\frac{7}{8}$	3	$4\frac{1}{2}$	10	$0\frac{1}{8}$
2	$4\frac{5}{8}$	6	$10\frac{7}{8}$	2	$8\frac{5}{8}$	7	$11\frac{3}{8}$	3	$0\frac{5}{8}$	9	0	3	$4\frac{5}{8}$	10	$0\frac{1}{2}$
2	$4\frac{3}{4}$	6	$11\frac{1}{4}$	2	$8\frac{3}{4}$	7	$11\frac{3}{4}$	3	$0\frac{3}{4}$	9	$0\frac{3}{8}$	3	$4\frac{3}{4}$	10	$0\frac{7}{8}$
2	$4\frac{7}{8}$	6	$11\frac{5}{8}$	2	$8\frac{7}{8}$	8	$0\frac{1}{8}$	3	$0\frac{7}{8}$	9	$0\frac{3}{4}$	3	$4\frac{7}{8}$	10	$1\frac{1}{8}$

For ANGLE IRON measuring $1\frac{1}{2}$ of an Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
3	5	10	$1\frac{3}{4}$	3	9	11	$2\frac{1}{4}$	4	1	12	$2\frac{7}{8}$	4	5	13	$3\frac{3}{8}$
3	$5\frac{1}{8}$	10	$2\frac{1}{8}$	3	$9\frac{1}{8}$	11	$2\frac{5}{8}$	4	$1\frac{1}{8}$	12	$3\frac{1}{4}$	4	$5\frac{1}{8}$	13	$3\frac{3}{4}$
3	$5\frac{1}{4}$	10	$2\frac{1}{2}$	3	$9\frac{1}{4}$	11	3	4	$1\frac{1}{4}$	12	$3\frac{5}{8}$	4	$5\frac{1}{4}$	13	$4\frac{1}{4}$
3	$5\frac{3}{8}$	10	$2\frac{7}{8}$	3	$9\frac{3}{8}$	11	$3\frac{1}{2}$	4	$1\frac{3}{8}$	12	4	4	$5\frac{3}{8}$	13	$4\frac{5}{8}$
3	$5\frac{1}{2}$	10	$3\frac{1}{4}$	3	$9\frac{1}{2}$	11	$3\frac{7}{8}$	4	$1\frac{1}{2}$	12	$4\frac{3}{8}$	4	$5\frac{1}{2}$	13	5
3	$5\frac{5}{8}$	10	$3\frac{5}{8}$	3	$9\frac{5}{8}$	11	$4\frac{1}{4}$	4	$1\frac{5}{8}$	12	$4\frac{3}{4}$	4	$5\frac{5}{8}$	13	$5\frac{3}{8}$
3	$5\frac{3}{4}$	10	4	3	$9\frac{3}{4}$	11	$4\frac{5}{8}$	4	$1\frac{3}{4}$	12	$5\frac{1}{4}$	4	$5\frac{3}{4}$	13	$5\frac{3}{4}$
3	$5\frac{7}{8}$	10	$4\frac{1}{2}$	3	$9\frac{7}{8}$	11	5	4	$1\frac{7}{8}$	12	$5\frac{5}{8}$	4	$5\frac{7}{8}$	13	$6\frac{1}{8}$
3	6	10	$4\frac{7}{8}$	3	10	11	$5\frac{3}{8}$	4	2	12	6	4	6	13	$6\frac{1}{2}$
3	$6\frac{1}{8}$	10	$5\frac{1}{4}$	3	$10\frac{1}{8}$	11	$5\frac{3}{4}$	4	$2\frac{1}{8}$	12	$6\frac{3}{8}$	4	$6\frac{1}{8}$	13	7
3	$6\frac{1}{4}$	10	$5\frac{5}{8}$	3	$10\frac{1}{4}$	11	$6\frac{1}{4}$	4	$2\frac{1}{4}$	12	$6\frac{3}{4}$	4	$6\frac{1}{4}$	13	$7\frac{3}{8}$
3	$6\frac{3}{8}$	10	6	3	$10\frac{3}{8}$	11	$6\frac{5}{8}$	4	$2\frac{3}{8}$	12	$7\frac{1}{8}$	4	$6\frac{3}{8}$	13	$7\frac{3}{4}$
3	$6\frac{1}{2}$	10	$6\frac{3}{8}$	3	$10\frac{1}{2}$	11	7	4	$2\frac{1}{2}$	12	$7\frac{1}{2}$	4	$6\frac{1}{2}$	13	$8\frac{1}{8}$
3	$6\frac{5}{8}$	10	$6\frac{7}{8}$	3	$10\frac{5}{8}$	11	$7\frac{3}{8}$	4	$2\frac{5}{8}$	12	$7\frac{7}{8}$	4	$6\frac{5}{8}$	13	$8\frac{1}{2}$
3	$6\frac{3}{4}$	10	$7\frac{1}{4}$	3	$10\frac{3}{4}$	11	$7\frac{3}{4}$	4	$2\frac{3}{4}$	12	$8\frac{3}{8}$	4	$6\frac{3}{4}$	13	$8\frac{7}{8}$
3	$6\frac{7}{8}$	10	$7\frac{5}{8}$	3	$10\frac{7}{8}$	11	$8\frac{1}{8}$	4	$2\frac{7}{8}$	12	$8\frac{3}{4}$	4	$6\frac{7}{8}$	13	$9\frac{1}{4}$
3	7	10	8	3	11	11	$8\frac{1}{2}$	4	3	12	$9\frac{1}{8}$	4	7	13	$9\frac{5}{8}$
3	$7\frac{1}{8}$	10	$8\frac{3}{8}$	3	$11\frac{1}{8}$	11	$8\frac{7}{8}$	4	$3\frac{1}{8}$	12	$9\frac{1}{2}$	4	$7\frac{1}{8}$	13	$10\frac{1}{8}$
3	$7\frac{1}{4}$	10	$8\frac{3}{4}$	3	$11\frac{1}{4}$	11	$9\frac{3}{8}$	4	$3\frac{1}{4}$	12	$9\frac{7}{8}$	4	$7\frac{1}{4}$	13	$10\frac{1}{2}$
3	$7\frac{3}{8}$	10	$9\frac{1}{8}$	3	$11\frac{3}{8}$	11	$9\frac{3}{4}$	4	$3\frac{3}{8}$	12	$10\frac{3}{8}$	4	$7\frac{3}{8}$	13	$10\frac{7}{8}$
3	$7\frac{1}{2}$	10	$9\frac{1}{2}$	3	$11\frac{1}{2}$	11	$10\frac{1}{8}$	4	$3\frac{1}{2}$	12	$10\frac{3}{4}$	4	$7\frac{1}{2}$	13	$11\frac{1}{4}$
3	$7\frac{5}{8}$	10	$9\frac{7}{8}$	3	$11\frac{5}{8}$	11	$10\frac{1}{2}$	4	$3\frac{5}{8}$	12	$11\frac{1}{8}$	4	$7\frac{5}{8}$	13	$11\frac{5}{8}$
3	$7\frac{3}{4}$	10	$10\frac{3}{8}$	3	$11\frac{3}{4}$	11	$10\frac{7}{8}$	4	$3\frac{3}{4}$	12	$11\frac{1}{2}$	4	$7\frac{3}{4}$	14	0
3	$7\frac{7}{8}$	10	$10\frac{3}{4}$	3	$11\frac{7}{8}$	11	$11\frac{1}{4}$	4	$3\frac{7}{8}$	12	$11\frac{7}{8}$	4	$7\frac{7}{8}$	14	$0\frac{3}{8}$
3	8	10	$11\frac{1}{8}$	4	0	11	$11\frac{5}{8}$	4	4	13	$0\frac{1}{2}$	4	8	14	$0\frac{7}{8}$
3	$8\frac{1}{8}$	10	$11\frac{1}{2}$	4	$0\frac{1}{8}$	12	$0\frac{1}{8}$	4	$4\frac{1}{8}$	13	$0\frac{5}{8}$	4	$8\frac{1}{8}$	14	$1\frac{1}{4}$
3	$8\frac{1}{4}$	10	$11\frac{7}{8}$	4	$0\frac{1}{4}$	12	$0\frac{1}{2}$	4	$4\frac{1}{4}$	13	1	4	$8\frac{1}{4}$	14	$1\frac{5}{8}$
3	$8\frac{3}{8}$	11	$0\frac{3}{8}$	4	$0\frac{3}{8}$	12	$0\frac{7}{8}$	4	$4\frac{3}{8}$	13	$1\frac{1}{2}$	4	$8\frac{3}{8}$	14	2
3	$8\frac{1}{2}$	11	$0\frac{3}{4}$	4	$0\frac{1}{2}$	12	$1\frac{1}{4}$	4	$4\frac{1}{2}$	13	$1\frac{7}{8}$	4	$8\frac{1}{2}$	14	$2\frac{3}{8}$
3	$8\frac{5}{8}$	11	$1\frac{1}{8}$	4	$0\frac{5}{8}$	12	$1\frac{5}{8}$	4	$4\frac{5}{8}$	13	$2\frac{1}{4}$	4	$8\frac{5}{8}$	14	$2\frac{3}{4}$
3	$8\frac{3}{4}$	11	$1\frac{1}{2}$	4	$0\frac{3}{4}$	12	2	4	$4\frac{3}{4}$	13	$2\frac{5}{8}$	4	$8\frac{3}{4}$	14	$3\frac{1}{8}$
3	$8\frac{7}{8}$	11	$1\frac{7}{8}$	4	$0\frac{7}{8}$	12	$2\frac{3}{8}$	4	$4\frac{7}{8}$	13	3	4	$8\frac{7}{8}$	14	$3\frac{1}{2}$

For Angle Iron measuring 1½ Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN
4	9	14	4	5	1	15	4½	5	5	16	5⅛	5	9	17	5⅝
4	9⅛	14	4⅜	5	1⅛	15	4⅞	5	5⅛	16	5⅓	5	9⅛	17	6
4	9¼	14	4¾	5	1¼	15	5⅜	5	5¼	16	5⅞	5	9¼	17	6⅓
4	9⅜	14	5⅛	5	1⅜	15	5¾	5	5⅜	16	6¼	5	9⅜	17	6⅞
4	9½	14	5⅓	5	1½	15	6⅛	5	5½	16	6⅝	5	9½	17	7¼
4	9⅝	14	5⅞	5	1⅝	15	6⅓	5	5⅝	16	7	5	9⅝	17	7⅝
4	9¾	14	6⅜	5	1¾	15	6⅞	5	5¾	16	7⅓	5	9¾	17	8
4	9⅞	14	6¾	5	1⅞	15	7¼	5	5⅞	16	7⅞	5	9⅞	17	8⅜
4	10	14	7⅛	5	2	15	7¾	5	6	16	8¼	5	10	17	8⅞
4	10⅛	14	7⅓	5	2⅛	15	8⅛	5	6⅛	16	8⅝	5	10⅛	17	9¼
4	10¼	14	7⅞	5	2¼	15	8⅝	5	6¼	16	9	5	10¼	17	9⅝
4	10⅜	14	8⅓	5	2⅜	15	8⅞	5	6⅜	16	9⅜	5	10⅜	17	10
4	10½	14	8⅝	5	2½	15	9¼	5	6½	16	9⅞	5	10½	17	10⅜
4	10⅝	14	9⅛	5	2⅝	15	9⅝	5	6⅝	16	10⅓	5	10⅝	17	10¾
4	10¾	14	9½	5	2¾	15	10	5	6¾	16	10⅝	5	10¾	17	11⅛
4	10⅞	14	9⅞	5	2⅞	15	10⅜	5	6⅞	16	11	5	10⅞	17	11½
4	11	14	10¼	5	3	15	10⅞	5	7	16	11⅜	5	11	18	0
4	11⅛	14	10⅝	5	3⅛	15	11¼	5	7⅛	16	11¾	5	11⅛	18	0⅜
4	11¼	14	11	5	3¼	15	11⅝	5	7¼	17	0⅛	5	11¼	18	0¾
4	11⅜	14	11½	5	3⅜	16	0	5	7⅜	17	0⅝	5	11⅜	18	1⅛
4	11½	14	11⅞	5	3½	16	0⅜	5	7½	17	1	5	11½	18	1½
4	11⅝	15	0¼	5	3⅝	16	0¾	5	7⅝	17	1⅜	5	11⅝	18	1⅞
4	11¾	15	0⅝	5	3¾	16	1⅛	5	7¾	17	1¾	5	11¾	18	2⅜
4	11⅞	15	1	5	3⅞	16	1⅝	5	7⅞	17	2⅛	5	11⅞	18	2¾
5	0	15	1⅜	5	4	16	2	5	8	17	2½	6	0	18	3⅛
5	0⅛	15	1⅞	5	4⅛	16	2⅜	5	8⅛	17	2⅞	6	0⅛	18	3½
5	0¼	15	2¼	5	4¼	16	2¾	5	8¼	17	3⅜	6	0¼	18	3⅞
5	0⅜	15	2⅝	5	4⅜	16	3⅛	5	8⅜	17	3¾	6	0⅜	18	4¼
5	0½	15	3	5	4½	16	3½	5	8½	17	4⅛	6	0½	18	4⅝
5	0⅝	15	3⅜	5	4⅝	16	3⅞	5	8⅝	17	4½	6	0⅝	18	5
5	0¾	15	3¾	5	4¾	16	4⅜	5	8¾	17	4⅞	6	0¾	18	5½
5	0⅞	15	4⅛	5	4⅞	16	4¾	5	8⅞	17	5¼	6	0⅞	18	5⅞

For ANGLE IRON measuring 1⅛ Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
6	1	18	6¼	6	5	19	6⅜	6	9	20	7⅜	7	1	21	8
6	1⅛	18	6⅝	6	5⅛	19	7¼	6	9⅛	20	7¾	7	1⅛	21	8⅛
6	1¼	18	7	6	5¼	19	7⅛	6	9¼	20	8⅛	7	1¼	21	8¼
6	1⅜	18	7⅜	6	5⅜	19	8	6	9⅜	20	8½	7	1⅜	21	9⅛
6	1½	18	7⅞	6	5½	19	8⅜	6	9½	20	9	7	1½	21	9½
6	1⅝	18	8¼	6	5⅝	19	8¾	6	9⅝	20	9⅜	7	1⅝	21	9⅞
6	1¾	18	8⅝	6	5¾	19	9⅛	6	9¾	20	9¾	7	1¾	21	10⅜
6	1⅞	18	9	6	5⅞	19	9⅝	6	9⅞	20	10⅛	7	1⅞	21	10¾
6	2	18	9⅜	6	6	19	10	6	10	20	10½	7	2	21	11⅛
6	2⅛	18	9¾	6	6⅛	19	10⅜	6	10⅛	20	10⅞	7	2⅛	21	11½
6	2¼	18	10⅛	6	6¼	19	10¾	6	10¼	20	11⅜	7	2¼	21	11⅞
6	2⅜	18	10½	6	6⅜	19	11⅛	6	10⅜	20	11¾	7	2⅜	22	0¼
6	2½	18	11	6	6½	19	11½	6	10½	21	0⅛	7	2½	22	0⅝
6	2⅝	18	11⅜	6	6⅝	19	11⅞	6	10⅝	21	0½	7	2⅝	22	1
6	2¾	18	11¾	6	6¾	20	0⅜	6	10¾	21	0⅞	7	2¾	22	1½
6	2⅞	19	0⅛	6	6⅞	20	0¾	6	10⅞	21	1¼	7	2⅞	22	1⅞
6	3	19	0½	6	7	20	1⅛	6	11	21	1⅛	7	3	22	2¼
6	3⅛	19	0⅞	6	7⅛	20	1½	6	11⅛	21	2	7	3⅛	22	2⅝
6	3¼	19	1⅜	6	7¼	20	1⅞	6	11¼	21	2½	7	3¼	22	3
6	3⅜	19	1¾	6	7⅜	20	2¼	6	11⅜	21	2⅞	7	3⅜	22	3⅜
6	3½	19	2⅛	6	7½	20	2⅝	6	11½	21	3¼	7	3½	22	3⅞
6	3⅝	19	2½	6	7⅝	20	3	6	11⅝	21	3⅝	7	3⅝	22	4¼
6	3¾	19	2⅞	6	7¾	20	3½	6	11¾	21	4	7	3¾	22	4⅝
6	3⅞	19	3¼	6	7⅞	20	3⅞	6	11⅞	21	4⅜	7	3⅞	22	5
6	4	19	3⅝	6	8	20	4¼	7	0	21	4¾	7	4	22	5⅜
6	4⅛	19	4	6	8⅛	20	4⅝	7	0⅛	21	5⅛	7	4⅛	22	5¾
6	4¼	19	4½	6	8¼	20	5	7	0¼	21	5½	7	4¼	22	6⅛
6	4⅜	19	4⅞	6	8⅜	20	5⅜	7	0⅜	21	6	7	4⅜	22	6½
6	4½	19	5¼	6	8½	20	5⅞	7	0½	21	6⅜	7	4½	22	7
6	4⅝	19	5⅝	6	8⅝	20	6¼	7	0⅝	21	6¾	7	4⅝	22	7⅜
6	4¾	19	6	6	8¾	20	6⅝	7	0¾	21	7⅛	7	4¾	22	7¾
6	4⅞	19	6⅜	6	8⅞	20	7	7	0⅞	21	7⅝	7	4⅞	22	8⅛

For Angle Iron measuring 1⅛ Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN
7	5	22	8½	7	9	23	9⅛	8	1	24	9⅝	8	5	25	10¼
7	5⅛	22	8⅞	7	9⅛	23	9½	8	1⅛	24	10	8	5⅛	25	10⅝
7	5¼	22	9¼	7	9¼	23	9⅞	8	1¼	24	10½	8	5¼	25	11
7	5⅜	22	9¾	7	9⅜	23	10¼	8	1⅜	24	10⅞	8	5⅜	25	11⅜
7	5½	22	10⅛	7	9½	23	10⅝	8	1½	24	11¼	8	5½	25	11¾
7	5⅝	22	10½	7	9⅝	23	11	8	1⅝	24	11⅝	8	5⅝	26	0⅛
7	5¾	22	10⅞	7	9¾	23	11½	8	1¾	25	0	8	5¾	26	0⅝
7	5⅞	22	11¼	7	9⅞	23	11⅞	8	1⅞	25	0⅜	8	5⅞	26	1
7	6	22	11⅝	7	10	24	0¼	8	2	25	0¾	8	6	26	1⅜
7	6⅛	23	0	7	10⅛	24	0⅝	8	2⅛	25	1¼	8	6⅛	26	1¾
7	6¼	23	0½	7	10¼	24	1	8	2¼	25	1⅝	8	6¼	26	2⅛
7	6⅜	23	0⅞	7	10⅜	24	1⅜	8	2⅜	25	2	8	6⅜	26	2½
7	6½	23	1¼	7	10½	24	1¾	8	2½	25	2⅜	8	6½	26	2⅞
7	6⅝	23	1⅝	7	10⅝	24	2¼	8	2⅝	25	2¾	8	6⅝	26	3⅜
7	6¾	23	2	7	10¾	24	2⅝	8	2¾	25	3⅛	8	6¾	26	3¾
7	6⅞	23	2⅜	7	10⅞	24	3	8	2⅞	25	3½	8	6⅞	26	4⅛
7	7	23	2¾	7	11	24	3⅜	8	3	25	3⅞	8	7	26	4½
7	7⅛	23	3¼	7	11⅛	24	3¾	8	3⅛	25	4⅜	8	7⅛	26	4⅞
7	7¼	23	3⅝	7	11¼	24	4⅛	8	3¼	25	4¾	8	7¼	26	5¼
7	7⅜	23	4	7	11⅜	24	4½	8	3⅜	25	5⅛	8	7⅜	26	5⅝
7	7½	23	4⅜	7	11½	24	4⅞	8	3½	25	5½	8	7½	26	6
7	7⅝	23	4¾	7	11⅝	24	5⅜	8	3⅝	25	5⅞	8	7⅝	26	6½
7	7¾	23	5⅛	7	11¾	24	5¾	8	3¾	25	6¼	8	7¾	26	6⅞
7	7⅞	23	5½	7	11⅞	24	6⅛	8	3⅞	25	6⅝	8	7⅞	26	7¼
7	8	23	6	8	0	24	6½	8	4	25	7	8	8	26	7⅝
7	8⅛	23	6⅜	8	0⅛	24	6⅞	8	4⅛	25	7½	8	8⅛	26	8
7	8¼	23	6¾	8	0¼	24	7¼	8	4¼	25	7⅞	8	8¼	26	8⅜
7	8⅜	23	7⅛	8	0⅜	24	7⅝	8	4⅜	25	8¼	8	8⅜	26	8⅞
7	8½	23	7½	8	0½	24	8	8	4½	25	8⅝	8	8½	26	9¼
7	8⅝	23	7⅞	8	0⅝	24	8½	8	4⅝	25	9	8	8⅝	26	9⅝
7	8¾	23	8¼	8	0¾	24	8⅞	8	4¾	25	9½	8	8¾	26	10
7	8⅞	23	8¾	8	0⅞	24	9¼	8	4⅞	25	9⅞	8	8⅞	26	10⅜

TABLE XVIII.

For Angle Iron measuring 1¼ Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
0	9	1	8 3/8	1	1	2	9	1	5	3	9 1/2	1	9	4	10 1/8
0	9 1/8	1	8 3/4	1	1 1/8	2	9 3/8	1	5 1/8	3	9 7/8	1	9 1/8	4	10 1/2
0	9 1/4	1	9 1/8	1	1 1/4	2	9 3/4	1	5 1/4	3	10 3/8	1	9 1/4	4	10 7/8
0	9 3/8	1	9 1/2	1	1 3/8	2	10 1/8	1	5 3/8	3	10 3/4	1	9 3/8	4	11 1/4
0	9 1/2	1	10	1	1 1/2	2	10 1/2	1	5 1/2	3	11 1/8	1	9 1/2	4	11 5/8
0	9 5/8	1	10 3/8	1	1 5/8	2	10 7/8	1	5 5/8	3	11 1/2	1	9 5/8	5	0
0	9 3/4	1	10 3/4	1	1 3/4	2	11 3/8	1	5 3/4	3	11 7/8	1	9 3/4	5	0 3/8
0	9 7/8	1	11 1/8	1	1 7/8	2	11 3/4	1	5 7/8	4	0 1/4	1	9 7/8	5	0 7/8
0	10	1	11 1/2	1	2	3	0 1/8	1	6	4	0 5/8	1	10	5	1 1/4
0	10 1/8	1	11 7/8	1	2 1/8	3	0 1/2	1	6 1/8	4	1	1	10 1/8	5	1 5/8
0	10 1/4	2	0 3/8	1	2 1/4	3	0 7/8	1	6 1/4	4	1 3/8	1	10 1/4	5	2
0	10 3/8	2	0 3/4	1	2 3/8	3	1 1/4	1	6 3/8	4	1 7/8	1	10 3/8	5	2 3/8
0	10 1/2	2	1 1/8	1	2 1/2	3	1 5/8	1	6 1/2	4	2 1/4	1	10 1/2	5	2 3/4
0	10 5/8	2	1 1/2	1	2 5/8	3	2	1	6 5/8	4	2 5/8	1	10 5/8	5	3 1/8
0	10 3/4	2	1 7/8	1	2 3/4	3	2 1/2	1	6 3/4	4	3	1	10 3/4	5	3 5/8
0	10 7/8	2	2 1/8	1	2 7/8	3	2 7/8	1	6 7/8	4	3 3/8	1	10 7/8	5	4
0	11	2	2 3/4	1	3	3	3 1/4	1	7	4	3 3/4	1	11	5	4 3/8
0	11 1/8	2	3 1/8	1	3 1/8	3	3 5/8	1	7 1/8	4	4 1/8	1	11 1/8	5	4 3/4
0	11 1/4	2	3 1/2	1	3 1/4	3	4	1	7 1/4	4	4 1/2	1	11 1/4	5	5 1/8
0	11 3/8	2	3 7/8	1	3 3/8	3	4 3/8	1	7 3/8	4	5	1	11 3/8	5	5 1/2
0	11 1/2	2	4 1/4	1	3 1/2	3	4 7/8	1	7 1/2	4	5 3/8	1	11 1/2	5	5 7/8
0	11 5/8	2	4 5/8	1	3 5/8	3	5 1/4	1	7 5/8	4	5 3/4	1	11 5/8	5	6 3/8
0	11 3/4	2	5	1	3 3/4	3	5 5/8	1	7 3/4	4	6 1/8	1	11 3/4	5	6 3/4
0	11 7/8	2	5 1/2	1	3 7/8	3	6	1	7 7/8	4	6 1/2	1	11 7/8	5	7 1/8
1	0	2	5 7/8	1	4	3	6 3/8	1	8	4	7	2	0	5	7 1/2
1	0 1/8	2	6 1/4	1	4 1/8	3	6 3/4	1	8 1/8	4	7 3/8	2	0 1/8	5	8
1	0 1/4	2	6 5/8	1	4 1/4	3	7 1/8	1	8 1/4	4	7 3/4	2	0 1/4	5	8 3/8
1	0 3/8	2	7	1	4 3/8	3	7 5/8	1	8 3/8	4	8 1/8	2	0 3/8	5	8 3/4
1	0 1/2	2	7 3/8	1	4 1/2	3	8	1	8 1/2	4	8 1/2	2	0 1/2	5	9 1/8
1	0 5/8	2	7 3/4	1	4 5/8	3	8 3/8	1	8 5/8	4	8 7/8	2	0 5/8	5	9 1/2
1	0 3/4	2	8 1/4	1	4 3/4	3	8 3/4	1	8 3/4	4	9 1/4	2	0 3/4	5	9 7/8
1	0 7/8	2	8 5/8	1	4 7/8	3	9 1/8	1	8 7/8	4	9 5/8	2	0 7/8	5	10 1/4

For Angle Iron measuring 1¼ Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
2	1	5	10 5/8	2	5	6	11 1/4	2	9	7	11 3/4	3	1	9	0 3/8
2	1 1/8	5	11	2	5 1/8	6	11 5/8	2	9 1/8	8	0 1/8	3	1 1/8	9	0 3/4
2	1 1/4	5	11 1/4	2	5 1/4	7	0	2	9 1/4	8	0 1/2	3	1 1/4	9	1 1/8
2	1 3/8	5	11 7/8	2	5 3/8	7	0 3/8	2	9 3/8	8	1	3	1 3/8	9	1 1/2
2	1 1/2	6	0 1/4	2	5 1/2	7	0 3/4	2	9 1/2	8	1 3/8	3	1 1/2	9	1 7/8
2	1 5/8	6	0 5/8	2	5 5/8	7	1 1/8	2	9 5/8	8	1 3/4	3	1 5/8	9	2 3/8
2	1 3/4	6	1	2	5 3/4	7	1 1/2	2	9 3/4	8	2 1/8	3	1 3/4	9	2 3/4
2	1 7/8	6	1 3/8	2	5 7/8	7	2	2	9 7/8	8	2 1/2	3	1 7/8	9	3 1/8
2	2	6	1 3/4	2	6	7	2 3/8	2	10	8	2 7/8	3	2	9	3 1/2
2	2 1/8	6	2 1/4	2	6 1/8	7	2 3/4	2	10 1/8	8	3 3/8	3	2 1/8	9	3 7/8
2	2 1/4	6	2 5/8	2	6 1/4	7	3 1/8	2	10 1/4	8	3 3/4	3	2 1/4	9	4 1/4
2	2 3/8	6	3	2	6 3/8	7	3 1/2	2	10 3/8	8	4 1/8	3	2 3/8	9	4 5/8
2	2 1/2	6	3 3/8	2	6 1/2	7	3 7/8	2	10 1/2	8	4 1/2	3	2 1/2	9	5
2	2 5/8	6	3 3/4	2	6 5/8	7	4 3/8	2	10 5/8	8	4 7/8	3	2 5/8	9	5 1/2
2	2 3/4	6	4 1/8	2	6 3/4	7	4 3/4	2	10 3/4	8	5 1/4	3	2 3/4	9	5 7/8
2	2 7/8	6	4 1/2	2	6 7/8	7	5 1/8	2	10 7/8	8	5 5/8	3	2 7/8	9	6 1/4
2	3	6	4 7/8	2	7	7	5 1/2	2	11	8	6	3	3	9	6 5/8
2	3 1/8	6	5 3/8	2	7 1/8	7	5 7/8	2	11 1/8	8	6 1/2	3	3 1/8	9	7
2	3 1/4	6	5 3/4	2	7 1/4	7	6 1/4	2	11 1/4	8	6 7/8	3	3 1/4	9	7 3/8
2	3 3/8	6	6 1/8	2	7 3/8	7	6 5/8	2	11 3/8	8	7 1/4	3	3 3/8	9	7 7/8
2	3 1/2	6	6 1/2	2	7 1/2	7	7	2	11 1/2	8	7 5/8	3	3 1/2	9	8 1/4
2	3 5/8	6	6 7/8	2	7 5/8	7	7 1/2	2	11 5/8	8	8	3	3 5/8	9	8 5/8
2	3 3/4	6	7 1/4	2	7 3/4	7	7 7/8	2	11 3/4	8	8 3/8	3	3 3/4	9	9
2	3 7/8	6	7 5/8	2	7 7/8	7	8 1/4	2	11 7/8	8	8 7/8	3	3 7/8	9	9 3/8
2	4	6	8 1/8	2	8	7	8 5/8	3	0	8	9 1/4	3	4	9	9 3/4
2	4 1/8	6	8 1/2	2	8 1/8	7	9	3	0 1/8	8	9 5/8	3	4 1/8	9	10 1/8
2	4 1/4	6	8 7/8	2	8 1/4	7	9 3/8	3	0 1/4	8	10	3	4 1/4	9	10 1/2
2	4 3/8	6	9 1/4	2	8 3/8	7	9 3/4	3	0 3/8	8	10 3/8	3	4 3/8	9	10 7/8
2	4 1/2	6	9 5/8	2	8 1/2	7	10 1/4	3	0 1/2	8	10 3/4	3	4 1/2	9	11 3/8
2	4 5/8	6	10	2	8 5/8	7	10 5/8	3	0 5/8	8	11 1/8	3	4 5/8	9	11 3/4
2	4 3/4	6	10 1/4	2	8 3/4	7	11	3	0 3/4	8	11 1/2	3	4 3/4	10	0 1/8
2	4 7/8	6	10 7/8	2	8 7/8	7	11 3/8	3	0 7/8	9	0	3	4 7/8	10	0 1/2

For ANGLE IRON measuring 1¼ Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
3	5	10	0 7/8	3	9	11	1 1/2	4	1	12	2	4	5	13	2 1/8
3	5 1/8	10	1 3/8	3	9 1/8	11	1 7/8	4	1 1/8	12	2 3/8	4	5 1/8	13	3
3	5 1/4	10	1 3/4	3	9 1/4	11	2 1/4	4	1 1/4	12	2 7/8	4	5 1/4	13	3 1/8
3	5 3/8	10	2 1/8	3	9 3/8	11	2 5/8	4	1 3/8	12	3 1/4	4	5 3/8	13	3 1/4
3	5 1/2	10	2 1/2	3	9 1/2	11	3	4	1 1/2	12	3 5/8	4	5 1/2	13	4 1/4
3	5 5/8	10	2 7/8	3	9 5/8	11	3 1/2	4	1 5/8	12	4	4	5 5/8	13	4 1/8
3	5 3/4	10	3 1/4	3	9 3/4	11	3 7/8	4	1 3/4	12	4 3/8	4	5 3/4	13	5
3	5 7/8	10	3 5/8	3	9 7/8	11	4 1/4	4	1 7/8	12	4 3/4	4	5 7/8	13	5 1/8
3	6	10	4	3	10	11	4 5/8	4	2	12	5 1/4	4	6	13	5 1/4
3	6 1/8	10	4 1/2	3	10 1/8	11	5	4	2 1/8	12	5 5/8	4	6 1/8	13	6 1/8
3	6 1/4	10	4 7/8	3	10 1/4	11	5 3/8	4	2 1/4	12	6	4	6 1/4	13	6 1/4
3	6 3/8	10	5 1/4	3	10 3/8	11	5 3/4	4	2 3/8	12	6 3/8	4	6 3/8	13	7
3	6 1/2	10	5 5/8	3	10 1/2	11	6 1/4	4	2 1/2	12	6 3/4	4	6 1/2	13	7 1/8
3	6 5/8	10	6	3	10 5/8	11	6 5/8	4	2 5/8	12	7 1/8	4	6 5/8	13	7 1/4
3	6 3/4	10	6 3/8	3	10 3/4	11	7	4	2 3/4	12	7 1/2	4	6 3/4	13	8 1/8
3	6 7/8	10	6 7/8	3	10 7/8	11	7 3/8	4	2 7/8	12	7 7/8	4	6 7/8	13	8 1/4
3	7	10	7 1/4	3	11	11	7 3/4	4	3	12	8 3/8	4	7	13	8 7/8
3	7 1/8	10	7 5/8	3	11 1/8	11	8 1/8	4	3 1/8	12	8 3/4	4	7 1/8	13	9 1/4
3	7 1/4	10	8	3	11 1/4	11	8 1/2	4	3 1/4	12	9 1/8	4	7 1/4	13	9 5/8
3	7 3/8	10	8 3/8	3	11 3/8	11	8 7/8	4	3 3/8	12	9 1/2	4	7 3/8	13	10 1/8
3	7 1/2	10	8 3/4	3	11 1/2	11	9 3/8	4	3 1/2	12	9 7/8	4	7 1/2	13	10 1/2
3	7 5/8	10	9 1/8	3	11 5/8	11	9 3/4	4	3 5/8	12	10 3/8	4	7 5/8	13	10 7/8
3	7 3/4	10	9 1/2	3	11 3/4	11	10 1/8	4	3 3/4	12	10 3/4	4	7 3/4	13	11 1/4
3	7 7/8	10	9 7/8	3	11 7/8	11	10 1/2	4	3 7/8	12	11 1/8	4	7 7/8	13	11 5/8
3	8	10	10 3/8	4	0	11	10 7/8	4	4	12	11 1/2	4	8	14	0
3	8 1/8	10	10 3/4	4	0 1/8	11	11 1/4	4	4 1/8	12	11 7/8	4	8 1/8	14	0 3/8
3	8 1/4	10	11 1/8	4	0 1/4	11	11 5/8	4	4 1/4	13	0 1/4	4	8 1/4	14	0 7/8
3	8 3/8	10	11 1/2	4	0 3/8	12	0 1/8	4	4 3/8	13	0 5/8	4	8 3/8	14	1 1/4
3	8 1/2	10	11 7/8	4	0 1/2	12	0 1/2	4	4 1/2	13	1	4	8 1/2	14	1 5/8
3	8 5/8	11	0 3/8	4	0 5/8	12	0 7/8	4	4 5/8	13	1 1/2	4	8 5/8	14	2
3	8 3/4	11	0 3/4	4	0 3/4	12	1 1/4	4	4 3/4	13	1 7/8	4	8 3/4	14	2 3/8
3	8 7/8	11	1 1/8	4	0 7/8	12	1 5/8	4	4 7/8	13	2 1/4	4	8 7/8	14	2 3/4

For Angle Iron measuring 1¼ Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN
4	9	14	3⅛	5	1	15	3¾	5	5	16	4⅜	5	9	17	4⅞
4	9⅛	14	3½	5	1⅛	15	4⅛	5	5⅛	16	4¾	5	9⅛	17	5¼
4	9¼	14	4	5	1¼	15	4½	5	5¼	16	5⅛	5	9¼	17	5⅝
4	9⅜	14	4⅜	5	1⅜	15	4⅞	5	5⅜	16	5½	5	9⅜	17	6
4	9½	14	4¾	5	1½	15	5⅜	5	5½	16	5⅞	5	9½	17	6½
4	9⅝	14	5⅛	5	1⅝	15	5¾	5	5⅝	16	6¼	5	9⅝	17	6⅞
4	9¾	14	5½	5	1¾	15	6⅛	5	5¾	16	6⅝	5	9¾	17	7¼
4	9⅞	14	5⅞	5	1⅞	15	6½	5	5⅞	16	7	5	9⅞	17	7⅝
4	10	14	6⅜	5	2	15	6⅞	5	6	16	7½	5	10	17	8
4	10⅛	14	6¾	5	2⅛	15	7¼	5	6⅛	16	7⅞	5	10⅛	17	8⅜
4	10¼	14	7⅛	5	2¼	15	7¾	5	6¼	16	8¼	5	10¼	17	8⅞
4	10⅜	14	7½	5	2⅜	15	8⅛	5	6⅜	16	8⅝	5	10⅜	17	9¼
4	10½	14	7⅞	5	2½	15	8½	5	6½	16	9	5	10½	17	9⅝
4	10⅝	14	8¼	5	2⅝	15	8⅞	5	6⅝	16	9⅜	5	10⅝	17	10
4	10¾	14	8¾	5	2¾	15	9¼	5	6¾	16	9⅞	5	10¾	17	10⅜
4	10⅞	14	9⅛	5	2⅞	15	9⅝	5	6⅞	16	10¼	5	10⅞	17	10¾
4	11	14	9½	5	3	15	10	5	7	16	10⅝	5	11	17	11⅛
4	11⅛	14	9⅞	5	3⅛	15	10⅜	5	7⅛	16	11	5	11⅛	17	11½
4	11¼	14	10¼	5	3¼	15	10⅞	5	7¼	16	11⅜	5	11¼	18	0
4	11⅜	14	10⅝	5	3⅜	15	11¼	5	7⅜	16	11¾	5	11⅜	18	0⅜
4	11½	14	11	5	3½	15	11⅝	5	7½	17	0⅛	5	11½	18	0¾
4	11⅝	14	11½	5	3⅝	16	0	5	7⅝	17	0⅝	5	11⅝	18	1⅛
4	11¾	14	11⅞	5	3¾	16	0⅜	5	7¾	17	1	5	11¾	18	1½
4	11⅞	15	0¼	5	3⅞	16	0¾	5	7⅞	17	1⅜	5	11⅞	18	1⅞
5	0	15	0⅝	5	4	16	1⅛	5	8	17	1¾	6	0	18	2⅜
5	0⅛	15	1	5	4⅛	16	1⅝	5	8⅛	17	2⅛	6	0⅛	18	2¾
5	0¼	15	1⅜	5	4¼	16	2	5	8¼	17	2½	6	0¼	18	3⅛
5	0⅜	15	1⅞	5	4⅜	16	2⅜	5	8⅜	17	2⅞	6	0⅜	18	3½
5	0½	15	2¼	5	4½	16	2¾	5	8½	17	3⅜	6	0½	18	3⅞
5	0⅝	15	2⅝	5	4⅝	16	3⅛	5	8⅝	17	3¾	6	0⅝	18	4¼
5	0¾	15	3	5	4¾	16	3½	5	8¾	17	4⅛	6	0¾	18	4⅝
5	0⅞	15	3⅜	5	4⅞	16	3⅞	5	8⅞	17	4½	6	0⅞	18	5

For Angle Iron measuring 1¼ Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN
6	1	18	5½	6	5	19	6	6	9	20	6⅝	7	1	21	7⅛
6	1⅛	18	5⅞	6	5⅛	19	6⅜	6	9⅛	20	7	7	1⅛	21	7⅝
6	1¼	18	6¼	6	5¼	19	6⅞	6	9¼	20	7⅜	7	1¼	21	8
6	1⅜	18	6⅝	6	5⅜	19	7¼	6	9⅜	20	7¾	7	1⅜	21	8⅜
6	1½	18	7	6	5½	19	7⅝	6	9½	20	8⅛	7	1½	21	8¾
6	1⅝	18	7⅜	6	5⅝	19	8	6	9⅝	20	8½	7	1⅝	21	9⅛
6	1¾	18	7⅞	6	5¾	19	8⅜	6	9¾	20	9	7	1¾	21	9½
6	1⅞	18	8¼	6	5⅞	19	8¾	6	9⅞	20	9⅜	7	1⅞	21	9⅞
6	2	18	8⅝	6	6	19	9⅛	6	10	20	9¾	7	2	21	10⅜
6	2⅛	18	9	6	6⅛	19	9⅝	6	10⅛	20	10⅛	7	2⅛	21	10¾
6	2¼	18	9⅜	6	6¼	19	10	6	10¼	20	10½	7	2¼	21	11⅛
6	2⅜	18	9¾	6	6⅜	19	10⅜	6	10⅜	20	10⅞	7	2⅜	21	11½
6	2½	18	10⅛	6	6½	19	10¾	6	10½	20	11⅜	7	2½	21	11⅞
6	2⅝	18	10½	6	6⅝	19	11⅛	6	10⅝	20	11¾	7	2⅝	22	0¼
6	2¾	18	11	6	6¾	19	11½	6	10¾	21	0⅛	7	2¾	22	0⅝
6	2⅞	18	11⅜	6	6⅞	19	11⅞	6	10⅞	21	0½	7	2⅞	22	1
6	3	18	11¾	6	7	20	0⅜	6	11	21	0⅞	7	3	22	1½
6	3⅛	19	0⅛	6	7⅛	20	0¾	6	11⅛	21	1¼	7	3⅛	22	1⅞
6	3¼	19	0½	6	7¼	20	1⅛	6	11¼	21	1⅝	7	3¼	22	2¼
6	3⅜	19	0⅞	6	7⅜	20	1½	6	11⅜	21	2	7	3⅜	22	2⅝
6	3½	19	1⅜	6	7½	20	1⅞	6	11½	21	2½	7	3½	22	3
6	3⅝	19	1¾	6	7⅝	20	2¼	6	11⅝	21	2⅞	7	3⅝	22	3⅜
6	3¾	19	2⅛	6	7¾	20	2⅝	6	11¾	21	3¼	7	3¾	22	3⅞
6	3⅞	19	2½	6	7⅞	20	3	6	11⅞	21	3⅝	7	3⅞	22	4¼
6	4	19	2⅞	6	8	20	3½	7	0	21	4	7	4	22	4⅝
6	4⅛	19	3¼	6	8⅛	20	3⅞	7	0⅛	21	4⅜	7	4⅛	22	5
6	4¼	19	3⅝	6	8¼	20	4¼	7	0¼	21	4¾	7	4¼	22	5⅜
6	4⅜	19	4	6	8⅜	20	4⅝	7	0⅜	21	5⅛	7	4⅜	22	5¾
6	4½	19	4½	6	8½	20	5	7	0½	21	5½	7	4½	22	6⅛
6	4⅝	19	4⅞	6	8⅝	20	5⅜	7	0⅝	21	6	7	4⅝	22	6½
6	4¾	19	5¼	6	8¾	20	5⅞	7	0¾	21	6⅜	7	4¾	22	7
6	4⅞	19	5⅝	6	8⅞	20	6¼	7	0⅞	21	6¾	7	4⅞	22	7⅜

For Angle Iron measuring 1¼ Inch thick, diagonally across the root.

FLANGE INSIDE.

OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.		OUTSIDE DIAMETER OF RING.		LENGTH REQUIRED FOR RING.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN
7	5	22	7¾	7	9	23	8¼	8	1	24	8⅜	8	5	25	9½
7	5⅛	22	8⅛	7	9⅛	23	8¾	8	1⅛	24	9¼	8	5⅛	25	9⅞
7	5¼	22	8½	7	9¼	23	9⅛	8	1¼	24	9⅜	8	5¼	25	10¼
7	5⅜	22	8⅞	7	9⅜	23	9½	8	1⅜	24	10	8	5⅜	25	10⅜
7	5½	22	9¼	7	9½	23	9⅞	8	1½	24	10½	8	5½	25	11
7	5⅝	22	9¾	7	9⅝	23	10¼	8	1⅝	24	10⅞	8	5⅝	25	11⅜
7	5¾	22	10⅛	7	9¾	23	10⅝	8	1¾	24	11¼	8	5¾	25	11¾
7	5⅞	22	10½	7	9⅞	23	11	8	1⅞	24	11⅝	8	5⅞	26	0⅛
7	6	22	10⅞	7	10	23	11½	8	2	25	0	8	6	26	0⅝
7	6⅛	22	11¼	7	10⅛	23	11⅞	8	2⅛	25	0⅜	8	6⅛	26	1
7	6¼	22	11⅝	7	10¼	24	0¼	8	2¼	25	0¾	8	6¼	26	1⅜
7	6⅜	23	0	7	10⅜	24	0⅝	8	2⅜	25	1¼	8	6⅜	26	1¾
7	6½	23	0½	7	10½	24	1	8	2½	25	1⅝	8	6½	26	2⅛
7	6⅝	23	0⅞	7	10⅝	24	1⅜	8	2⅝	25	2	8	6⅝	26	2½
7	6¾	23	1¼	7	10¾	24	1¾	8	2¾	25	2⅜	8	6¾	26	2⅞
7	6⅞	23	1⅝	7	10⅞	24	2¼	8	2⅞	25	2¾	8	6⅞	26	3⅜
7	7	23	2	7	11	24	2⅝	8	3	25	3⅛	8	7	26	3¾
7	7⅛	23	2⅜	7	11⅛	24	3	8	3⅛	25	3½	8	7⅛	26	4⅛
7	7¼	23	2¾	7	11¼	24	3⅜	8	3¼	25	3⅞	8	7¼	26	4½
7	7⅜	23	3¼	7	11⅜	24	3¾	8	3⅜	25	4⅜	8	7⅜	26	4⅞
7	7½	23	3⅝	7	11½	24	4⅛	8	3½	25	4¾	8	7½	26	5¼
7	7⅝	23	4	7	11⅝	24	4½	8	3⅝	25	5⅛	8	7⅝	26	5⅝
7	7¾	23	4⅜	7	11¾	24	4⅞	8	3¾	25	5½	8	7¾	26	6
7	7⅞	23	4¾	7	11⅞	24	5⅜	8	3⅞	25	5⅞	8	7⅞	26	6½
7	8	23	5⅛	8	0	24	5¾	8	4	25	6¼	8	8	26	6⅞
7	8⅛	23	5½	8	0⅛	24	6⅛	8	4⅛	25	6⅝	8	8⅛	26	7¼
7	8¼	23	6	8	0¼	24	6½	8	4¼	25	7	8	8¼	26	7⅝
7	8⅜	23	6⅜	8	0⅜	24	6⅞	8	4⅜	25	7⅛	8	8⅜	26	8
7	8½	23	6¾	8	0½	24	7¼	8	4½	25	7⅞	8	8½	26	8⅜
7	8⅝	23	7⅛	8	0⅝	24	7⅝	8	4⅝	25	8¼	8	8⅝	26	8⅞
7	8¾	23	7½	8	0¾	24	8	8	4¾	25	8⅝	8	8¾	26	9¼
7	8⅞	23	7⅞	8	0⅞	24	8½	8	4⅞	25	9	8	8⅞	26	9⅝

THE BOILER-MAKERS'

AND

IRON SHIP-BUILDERS' COMPANION.

SECTION III.

Tables for the formation of Circular and Oval Pipes.

FIG. 1.

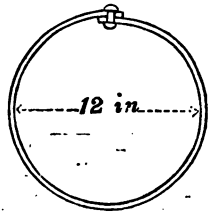


Figure 1 represents the end of a pipe whose inside diameter is 12 inches, and made of iron plates $\frac{1}{4}$ of an inch thick. In table 21, page 119, in the column of lengths opposite the given diameter, is 3 feet 2 inches, the length required between centre of rivet holes.

NOTE.—The lengths given in the tables for pipe making, are calculated from the centre of the rivet holes, the overlap on the outside of the pipe forms no part of the measurement.

EXAMPLE.—What length is required to make a pipe, the diameter being 1 foot 6 inches, of iron plates, measuring $\frac{1}{16}$ of an inch thick? In table 20, page 118, in the column of lengths opposite the given diameter, is 4 feet $8\frac{1}{16}$ inches, the length required between centre of rivet holes.

What length is required for a circular fire box for a small steam engine boiler, whose inside diameter is 2 feet $2\frac{1}{2}$ inches, to be made from iron plates $\frac{3}{8}$ of an inch thick? In table 25, page 128, in the column of lengths opposite the given diameter, is 7 feet $0\frac{3}{8}$ inch, the length required between centre of rivet holes.

RULE.—Take half the sum of the axis for the diameter.

EXAMPLE.—Suppose an oval pipe is required, whose axis are 1 foot 6 inches, and 1 foot $1\frac{1}{2}$ inches, to be made of iron plates $\frac{3}{16}$ of an inch thick; what length is required between centre of rivet holes?

1 foot 6 inches.
1 ,, $1\frac{1}{2}$,,

2 | 2 ,, $7\frac{1}{2}$,,

1 ,, $3\frac{3}{4}$,, the diameter required.

In table 22, page 121, opposite 1 foot $3\frac{3}{4}$ inches, is 4 ft. $2\frac{1}{16}$ in., the length required between centre of rivet holes.

TABLE XIX.

FOR PIPE MAKING.—Thickness of Plate $\frac{1}{32}$ of an Inch.

Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
0	1	0	$3\frac{7}{32}$	0	5	1	$3\frac{29}{32}$	0	9	2	$4\frac{11}{32}$	1	1	3	$4\frac{23}{32}$
0	$1\frac{1}{8}$	0	$3\frac{29}{32}$	0	$5\frac{1}{8}$	1	$4\frac{6}{32}$	0	$9\frac{1}{8}$	2	$4\frac{23}{32}$	1	$1\frac{1}{8}$	3	$5\frac{1}{32}$
0	$1\frac{1}{4}$	0	4	0	$5\frac{1}{4}$	1	$4\frac{13}{32}$	0	$9\frac{1}{4}$	2	$5\frac{5}{32}$	1	$1\frac{1}{4}$	3	$5\frac{13}{32}$
0	$1\frac{3}{8}$	0	$4\frac{1}{32}$	0	$5\frac{3}{8}$	1	$4\frac{21}{32}$	0	$9\frac{3}{8}$	2	$5\frac{21}{32}$	1	$1\frac{3}{8}$	3	$6\frac{3}{32}$
0	$1\frac{1}{2}$	0	$4\frac{25}{32}$	0	$5\frac{1}{2}$	1	$5\frac{13}{32}$	0	$9\frac{1}{2}$	2	$5\frac{29}{32}$	1	$1\frac{1}{2}$	3	$6\frac{15}{32}$
0	$1\frac{5}{8}$	0	$5\frac{6}{32}$	0	$5\frac{5}{8}$	1	$5\frac{25}{32}$	0	$9\frac{5}{8}$	2	$6\frac{13}{32}$	1	$1\frac{5}{8}$	3	$6\frac{29}{32}$
0	$1\frac{3}{4}$	0	$5\frac{19}{32}$	0	$5\frac{3}{4}$	1	$6\frac{5}{32}$	0	$9\frac{3}{4}$	2	$6\frac{25}{32}$	1	$1\frac{3}{4}$	3	$7\frac{9}{32}$
0	$1\frac{7}{8}$	0	$5\frac{31}{32}$	0	$5\frac{7}{8}$	1	$6\frac{17}{32}$	0	$9\frac{7}{8}$	2	$7\frac{3}{32}$	1	$1\frac{7}{8}$	3	$7\frac{23}{32}$
0	2	0	$6\frac{13}{32}$	0	6	1	$6\frac{29}{32}$	0	10	2	$7\frac{17}{32}$	1	2	3	$8\frac{3}{32}$
0	$2\frac{1}{8}$	0	$6\frac{25}{32}$	0	$6\frac{1}{8}$	1	$7\frac{13}{32}$	0	$10\frac{1}{8}$	2	$7\frac{29}{32}$	1	$2\frac{1}{8}$	3	$8\frac{15}{32}$
0	$2\frac{1}{4}$	0	$7\frac{5}{32}$	0	$6\frac{1}{4}$	1	$7\frac{29}{32}$	0	$10\frac{1}{4}$	2	$8\frac{9}{32}$	1	$2\frac{1}{4}$	3	$8\frac{27}{32}$
0	$2\frac{3}{8}$	0	$7\frac{17}{32}$	0	$6\frac{3}{8}$	1	$8\frac{9}{32}$	0	$10\frac{3}{8}$	2	$8\frac{21}{32}$	1	$2\frac{3}{8}$	3	$9\frac{7}{32}$
0	$2\frac{1}{2}$	0	$7\frac{29}{32}$	0	$6\frac{1}{2}$	1	$8\frac{25}{32}$	0	$10\frac{1}{2}$	2	$9\frac{3}{32}$	1	$2\frac{1}{2}$	3	$9\frac{19}{32}$
0	$2\frac{5}{8}$	0	$8\frac{13}{32}$	0	$6\frac{5}{8}$	1	$8\frac{29}{32}$	0	$10\frac{5}{8}$	2	$9\frac{15}{32}$	1	$2\frac{5}{8}$	3	$10\frac{1}{32}$
0	$2\frac{3}{4}$	0	$8\frac{29}{32}$	0	$6\frac{3}{4}$	1	$9\frac{9}{32}$	0	$10\frac{3}{4}$	2	$9\frac{27}{32}$	1	$2\frac{3}{4}$	3	$10\frac{13}{32}$
0	$2\frac{7}{8}$	0	$9\frac{4}{32}$	0	$6\frac{7}{8}$	1	$9\frac{25}{32}$	0	$10\frac{7}{8}$	2	$10\frac{8}{32}$	1	$2\frac{7}{8}$	3	$10\frac{29}{32}$
0	3	0	$9\frac{16}{32}$	0	7	1	$10\frac{2}{32}$	0	11	2	$10\frac{24}{32}$	1	3	3	$11\frac{7}{32}$
0	$3\frac{1}{8}$	0	$9\frac{28}{32}$	0	$7\frac{1}{8}$	1	$10\frac{18}{32}$	0	$11\frac{1}{8}$	2	$11\frac{1}{32}$	1	$3\frac{1}{8}$	3	$11\frac{23}{32}$
0	$3\frac{1}{4}$	0	$10\frac{9}{32}$	0	$7\frac{1}{4}$	1	$10\frac{31}{32}$	0	$11\frac{1}{4}$	2	$11\frac{13}{32}$	1	$3\frac{1}{4}$	4	0
0	$3\frac{3}{8}$	0	$10\frac{25}{32}$	0	$7\frac{3}{8}$	1	$11\frac{11}{32}$	0	$11\frac{3}{8}$	2	$11\frac{25}{32}$	1	$3\frac{3}{8}$	4	$0\frac{13}{32}$
0	$3\frac{1}{2}$	0	$11\frac{3}{32}$	0	$7\frac{1}{2}$	1	$11\frac{23}{32}$	0	$11\frac{1}{2}$	3	$0\frac{7}{16}$	1	$3\frac{1}{2}$	4	$0\frac{25}{32}$
0	$3\frac{5}{8}$	0	$11\frac{15}{32}$	0	$7\frac{5}{8}$	2	$0\frac{1}{32}$	0	$11\frac{5}{8}$	3	$0\frac{15}{32}$	1	$3\frac{5}{8}$	4	$1\frac{5}{32}$
0	$3\frac{3}{4}$	0	$11\frac{27}{32}$	0	$7\frac{3}{4}$	2	$0\frac{13}{32}$	0	$11\frac{3}{4}$	3	1	1	$3\frac{3}{4}$	4	$1\frac{17}{32}$
0	$3\frac{7}{8}$	1	$0\frac{8}{32}$	0	$7\frac{7}{8}$	2	$0\frac{29}{32}$	0	$11\frac{7}{8}$	3	$1\frac{1}{32}$	1	$3\frac{7}{8}$	4	$1\frac{29}{32}$
0	4	1	$0\frac{21}{32}$	0	8	2	$1\frac{7}{32}$	1	0	3	$1\frac{23}{32}$	1	4	4	$2\frac{1}{32}$
0	$4\frac{1}{8}$	1	$1\frac{1}{32}$	0	$8\frac{1}{8}$	2	$1\frac{19}{32}$	1	$0\frac{1}{8}$	3	$2\frac{6}{32}$	1	$4\frac{1}{8}$	4	$2\frac{23}{32}$
0	$4\frac{1}{4}$	1	$1\frac{13}{32}$	0	$8\frac{1}{4}$	2	2	1	$0\frac{1}{4}$	3	$2\frac{15}{32}$	1	$4\frac{1}{4}$	4	$3\frac{5}{32}$
0	$4\frac{3}{8}$	1	$1\frac{29}{32}$	0	$8\frac{3}{8}$	2	$2\frac{13}{32}$	1	$0\frac{3}{8}$	3	$2\frac{31}{32}$	1	$4\frac{3}{8}$	4	$3\frac{17}{32}$
0	$4\frac{1}{2}$	1	$2\frac{7}{32}$	0	$8\frac{1}{2}$	2	$2\frac{29}{32}$	1	$0\frac{1}{2}$	3	$3\frac{1}{32}$	1	$4\frac{1}{2}$	4	$3\frac{29}{32}$
0	$4\frac{5}{8}$	1	$2\frac{23}{32}$	0	$8\frac{5}{8}$	2	$3\frac{5}{32}$	1	$0\frac{5}{8}$	3	$3\frac{23}{32}$	1	$4\frac{5}{8}$	4	$4\frac{13}{32}$
0	$4\frac{3}{4}$	1	3	0	$8\frac{3}{4}$	2	$3\frac{21}{32}$	1	$0\frac{3}{4}$	3	$4\frac{4}{32}$	1	$4\frac{3}{4}$	4	$4\frac{29}{32}$
0	$4\frac{7}{8}$	1	$3\frac{13}{32}$	0	$8\frac{7}{8}$	2	$3\frac{29}{32}$	1	$0\frac{7}{8}$	3	$4\frac{27}{32}$	1	$4\frac{7}{8}$	4	$5\frac{3}{32}$

FOR PIPE MAKING.—Thickness of Plate $\frac{1}{32}$ of an Inch.

Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.	
FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
1	5	4	$5\frac{10}{32}$	1	9	5	$6\frac{8}{32}$	2	1	6	$6\frac{30}{32}$	2	5	7	$7\frac{6}{32}$
1	$5\frac{1}{8}$	4	$5\frac{26}{32}$	1	$9\frac{1}{8}$	5	$6\frac{14}{32}$	2	$1\frac{1}{8}$	6	7	2	$5\frac{1}{8}$	7	$7\frac{19}{32}$
1	$5\frac{1}{4}$	4	$6\frac{9}{32}$	1	$9\frac{1}{4}$	5	$6\frac{27}{32}$	2	$1\frac{1}{4}$	6	$7\frac{13}{32}$	2	$5\frac{1}{4}$	7	$7\frac{31}{32}$
1	$5\frac{3}{8}$	4	$6\frac{21}{32}$	1	$9\frac{3}{8}$	5	$7\frac{7}{32}$	2	$1\frac{3}{8}$	6	$7\frac{26}{32}$	2	$5\frac{3}{8}$	7	$8\frac{12}{32}$
1	$5\frac{1}{4}$	4	$7\frac{8}{32}$	1	$9\frac{1}{4}$	5	$7\frac{20}{32}$	2	$1\frac{1}{2}$	6	$8\frac{6}{32}$	2	$5\frac{1}{2}$	7	$8\frac{24}{32}$
1	$5\frac{5}{8}$	4	$7\frac{20}{32}$	1	$9\frac{5}{8}$	5	$8\frac{1}{32}$	2	$1\frac{5}{8}$	6	$8\frac{19}{32}$	2	$5\frac{5}{8}$	7	$9\frac{5}{32}$
1	$5\frac{3}{4}$	4	$7\frac{27}{32}$	1	$9\frac{3}{4}$	5	$8\frac{13}{32}$	2	$1\frac{3}{4}$	6	$8\frac{31}{32}$	2	$5\frac{3}{4}$	7	$9\frac{17}{32}$
1	$5\frac{7}{8}$	4	$8\frac{8}{32}$	1	$9\frac{7}{8}$	5	$8\frac{26}{32}$	2	$1\frac{7}{8}$	6	$9\frac{12}{32}$	2	$5\frac{7}{8}$	7	$9\frac{30}{32}$
1	6	4	$8\frac{20}{32}$	1	10	5	$9\frac{6}{32}$	2	2	6	$9\frac{24}{32}$	2	6	7	$10\frac{11}{32}$
1	$6\frac{1}{8}$	4	$9\frac{1}{32}$	1	$10\frac{1}{8}$	5	$9\frac{19}{32}$	2	$2\frac{1}{8}$	6	$10\frac{5}{32}$	2	$6\frac{1}{8}$	7	$10\frac{23}{32}$
1	$6\frac{1}{4}$	4	$9\frac{13}{32}$	1	$10\frac{1}{4}$	5	$9\frac{31}{32}$	2	$2\frac{1}{4}$	6	$10\frac{18}{32}$	2	$6\frac{1}{4}$	7	$11\frac{4}{32}$
1	$6\frac{3}{8}$	4	$9\frac{26}{32}$	1	$10\frac{3}{8}$	5	$10\frac{12}{32}$	2	$2\frac{3}{8}$	6	$10\frac{30}{32}$	2	$6\frac{3}{8}$	7	$11\frac{16}{32}$
1	$6\frac{1}{4}$	4	$10\frac{6}{32}$	1	$10\frac{1}{4}$	5	$10\frac{25}{32}$	2	$2\frac{1}{4}$	6	$11\frac{11}{32}$	2	$6\frac{1}{4}$	7	$11\frac{29}{32}$
1	$6\frac{5}{8}$	4	$10\frac{18}{32}$	1	$10\frac{5}{8}$	5	$11\frac{5}{32}$	2	$2\frac{5}{8}$	6	$11\frac{23}{32}$	2	$6\frac{5}{8}$	8	$0\frac{9}{32}$
1	$6\frac{3}{4}$	4	11	1	$10\frac{3}{4}$	5	$11\frac{18}{32}$	2	$2\frac{3}{4}$	7	$0\frac{4}{32}$	2	$6\frac{3}{4}$	8	$0\frac{32}{32}$
1	$6\frac{7}{8}$	4	$11\frac{12}{32}$	1	$10\frac{7}{8}$	5	$11\frac{30}{32}$	2	$2\frac{7}{8}$	7	$0\frac{16}{32}$	2	$6\frac{7}{8}$	8	$1\frac{3}{32}$
1	7	4	$11\frac{24}{32}$	1	11	6	$0\frac{1}{32}$	2	3	7	$0\frac{29}{32}$	2	7	8	$1\frac{15}{32}$
1	$7\frac{1}{8}$	5	$0\frac{5}{32}$	1	$11\frac{1}{8}$	6	$0\frac{33}{32}$	2	$3\frac{1}{8}$	7	$1\frac{10}{32}$	2	$7\frac{1}{8}$	8	$1\frac{33}{32}$
1	$7\frac{1}{4}$	5	$0\frac{17}{32}$	1	$11\frac{1}{4}$	6	$1\frac{4}{32}$	2	$3\frac{1}{4}$	7	$1\frac{32}{32}$	2	$7\frac{1}{4}$	8	$2\frac{8}{32}$
1	$7\frac{3}{8}$	5	$0\frac{30}{32}$	1	$11\frac{3}{8}$	6	$1\frac{17}{32}$	2	$3\frac{3}{8}$	7	$2\frac{23}{32}$	2	$7\frac{3}{8}$	8	$2\frac{31}{32}$
1	$7\frac{1}{2}$	5	$1\frac{10}{32}$	1	$11\frac{1}{2}$	6	$1\frac{29}{32}$	2	$3\frac{1}{2}$	7	$2\frac{15}{32}$	2	$7\frac{1}{2}$	8	$3\frac{24}{32}$
1	$7\frac{5}{8}$	5	$1\frac{24}{32}$	1	$11\frac{5}{8}$	6	$2\frac{10}{32}$	2	$3\frac{5}{8}$	7	$2\frac{32}{32}$	2	$7\frac{5}{8}$	8	$3\frac{14}{32}$
1	$7\frac{3}{4}$	5	$2\frac{4}{32}$	1	$11\frac{3}{4}$	6	$2\frac{23}{32}$	2	$3\frac{3}{4}$	7	$3\frac{8}{32}$	2	$7\frac{3}{4}$	8	$3\frac{27}{32}$
1	$7\frac{7}{8}$	5	$2\frac{17}{32}$	1	$11\frac{7}{8}$	6	$3\frac{3}{32}$	2	$3\frac{7}{8}$	7	$3\frac{31}{32}$	2	$7\frac{7}{8}$	8	$4\frac{7}{32}$
1	8	5	$2\frac{30}{32}$	2	0	6	$3\frac{15}{32}$	2	4	7	$4\frac{20}{32}$	2	8	8	$4\frac{20}{32}$
1	$8\frac{1}{8}$	5	$3\frac{10}{32}$	2	$0\frac{1}{8}$	6	$3\frac{33}{32}$	2	$4\frac{1}{8}$	7	$4\frac{14}{32}$	2	$8\frac{1}{8}$	8	5
1	$8\frac{1}{4}$	5	$3\frac{23}{32}$	2	$0\frac{1}{4}$	6	$4\frac{9}{32}$	2	$4\frac{1}{4}$	7	$4\frac{27}{32}$	2	$8\frac{1}{4}$	8	$5\frac{13}{32}$
1	$8\frac{3}{8}$	5	$4\frac{3}{32}$	2	$0\frac{3}{8}$	6	$4\frac{24}{32}$	2	$4\frac{3}{8}$	7	$5\frac{7}{32}$	2	$8\frac{3}{8}$	8	$5\frac{26}{32}$
1	$8\frac{1}{4}$	5	$4\frac{16}{32}$	2	$0\frac{1}{4}$	6	$5\frac{3}{32}$	2	$4\frac{1}{2}$	7	$5\frac{32}{32}$	2	$8\frac{1}{2}$	8	$6\frac{8}{32}$
1	$8\frac{5}{8}$	5	$4\frac{28}{32}$	2	$0\frac{5}{8}$	6	$5\frac{14}{32}$	2	$4\frac{5}{8}$	7	6	2	$8\frac{5}{8}$	8	$6\frac{21}{32}$
1	$8\frac{3}{4}$	5	$5\frac{8}{32}$	2	$0\frac{3}{4}$	6	$5\frac{27}{32}$	2	$4\frac{3}{4}$	7	$6\frac{13}{32}$	2	$8\frac{3}{4}$	8	$6\frac{31}{32}$
1	$8\frac{7}{8}$	5	$5\frac{21}{32}$	2	$0\frac{7}{8}$	6	$6\frac{7}{32}$	2	$4\frac{7}{8}$	7	$6\frac{26}{32}$	2	$8\frac{7}{8}$	8	$7\frac{18}{32}$

TABLE XX.

FOR PIPE MAKING.—Thickness of Plate $\frac{1}{16}$ of an Inch.

Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
0	1	0	$3\frac{5}{16}$	0	5	1	$8\frac{7}{8}$	0	9	2	$4\frac{7}{16}$	1	1	3	5
0	$1\frac{1}{8}$	0	$3\frac{1}{2}\frac{1}{6}$	0	$5\frac{1}{8}$	1	$4\frac{1}{4}$	0	$9\frac{1}{8}$	2	$4\frac{1}{2}\frac{3}{6}$	1	$1\frac{1}{8}$	3	$5\frac{1}{8}$
0	$1\frac{1}{4}$	0	$4\frac{1}{8}$	0	$5\frac{1}{4}$	1	$4\frac{1}{2}\frac{1}{6}$	0	$9\frac{1}{4}$	2	$5\frac{1}{8}$	1	$1\frac{1}{4}$	3	$5\frac{1}{2}\frac{3}{6}$
0	$1\frac{3}{8}$	0	$4\frac{1}{4}$	0	$5\frac{3}{8}$	1	$5\frac{1}{16}$	0	$9\frac{3}{8}$	2	$5\frac{1}{8}$	1	$1\frac{3}{8}$	3	$6\frac{3}{16}$
0	$1\frac{1}{2}$	0	$4\frac{7}{8}$	0	$5\frac{1}{2}$	1	$5\frac{7}{16}$	0	$9\frac{1}{2}$	2	6	1	$1\frac{1}{2}$	3	$6\frac{9}{16}$
0	$1\frac{5}{8}$	0	$5\frac{1}{4}$	0	$5\frac{5}{8}$	1	$5\frac{1}{2}\frac{3}{6}$	0	$9\frac{5}{8}$	2	$6\frac{7}{16}$	1	$1\frac{5}{8}$	3	7
0	$1\frac{3}{4}$	0	$5\frac{5}{8}$	0	$5\frac{3}{4}$	1	$6\frac{1}{4}$	0	$9\frac{3}{4}$	2	$6\frac{1}{2}\frac{3}{6}$	1	$1\frac{3}{4}$	3	$7\frac{1}{8}$
0	$1\frac{7}{8}$	0	$6\frac{1}{16}$	0	$5\frac{7}{8}$	1	$6\frac{1}{8}$	0	$9\frac{7}{8}$	2	$7\frac{3}{16}$	1	$1\frac{7}{8}$	3	$7\frac{1}{4}$
0	2	0	$6\frac{7}{16}$	0	6	1	7	0	10	2	$7\frac{9}{16}$	1	2	3	$8\frac{1}{8}$
0	$2\frac{1}{8}$	0	$6\frac{7}{8}$	0	$6\frac{1}{8}$	1	$7\frac{7}{16}$	0	$10\frac{1}{8}$	2	8	1	$2\frac{1}{8}$	3	$8\frac{9}{16}$
0	$2\frac{1}{4}$	0	$7\frac{1}{4}$	0	$6\frac{1}{4}$	1	$7\frac{1}{2}\frac{3}{6}$	0	$10\frac{1}{4}$	2	$8\frac{1}{8}$	1	$2\frac{1}{4}$	3	$8\frac{1}{2}\frac{5}{6}$
0	$2\frac{3}{8}$	0	$7\frac{5}{8}$	0	$6\frac{3}{8}$	1	$8\frac{3}{16}$	0	$10\frac{3}{8}$	2	$8\frac{1}{4}$	1	$2\frac{3}{8}$	3	$9\frac{5}{16}$
0	$2\frac{1}{2}$	0	8	0	$6\frac{1}{2}$	1	$8\frac{9}{16}$	0	$10\frac{1}{2}$	2	$9\frac{3}{16}$	1	$2\frac{1}{2}$	3	$9\frac{1}{2}\frac{1}{6}$
0	$2\frac{5}{8}$	0	$8\frac{7}{16}$	0	$6\frac{5}{8}$	1	9	0	$10\frac{5}{8}$	2	$9\frac{9}{16}$	1	$2\frac{5}{8}$	3	$10\frac{1}{8}$
0	$2\frac{3}{4}$	0	$8\frac{1}{2}\frac{3}{6}$	0	$6\frac{3}{4}$	1	$9\frac{3}{8}$	0	$10\frac{3}{4}$	2	$9\frac{1}{2}\frac{5}{6}$	1	$2\frac{3}{4}$	3	$10\frac{1}{8}$
0	$2\frac{7}{8}$	0	$9\frac{3}{16}$	0	$6\frac{7}{8}$	1	$9\frac{3}{4}$	0	$10\frac{7}{8}$	2	$10\frac{5}{16}$	1	$2\frac{7}{8}$	3	$10\frac{7}{8}$
0	3	0	$9\frac{5}{8}$	0	7	1	$10\frac{3}{16}$	0	11	2	$10\frac{3}{4}$	1	3	3	$11\frac{1}{4}$
0	$3\frac{1}{8}$	0	10	0	$7\frac{1}{8}$	1	$10\frac{9}{16}$	0	$11\frac{1}{8}$	2	$11\frac{1}{8}$	1	$3\frac{1}{8}$	3	$11\frac{1}{2}\frac{1}{6}$
0	$3\frac{1}{4}$	0	$10\frac{3}{8}$	0	$7\frac{1}{4}$	1	$10\frac{1}{2}\frac{5}{6}$	0	$11\frac{1}{4}$	2	$11\frac{1}{4}$	1	$3\frac{1}{4}$	4	$0\frac{1}{16}$
0	$3\frac{3}{8}$	0	$10\frac{3}{4}$	0	$7\frac{3}{8}$	1	$11\frac{5}{16}$	0	$11\frac{3}{8}$	2	$11\frac{7}{8}$	1	$3\frac{3}{8}$	4	$0\frac{7}{16}$
0	$3\frac{1}{2}$	0	$11\frac{3}{16}$	0	$7\frac{1}{2}$	1	$11\frac{3}{4}$	0	$11\frac{1}{2}$	3	$0\frac{5}{16}$	1	$3\frac{1}{2}$	4	$0\frac{1}{8}$
0	$3\frac{5}{8}$	0	$11\frac{9}{16}$	0	$7\frac{5}{8}$	2	$0\frac{1}{8}$	0	$11\frac{5}{8}$	3	$0\frac{1}{2}\frac{1}{6}$	1	$3\frac{5}{8}$	4	$1\frac{1}{4}$
0	$3\frac{3}{4}$	0	$11\frac{1}{2}\frac{5}{6}$	0	$7\frac{3}{4}$	2	$0\frac{1}{4}$	0	$11\frac{3}{4}$	3	$1\frac{1}{16}$	1	$3\frac{3}{4}$	4	$1\frac{3}{8}$
0	$3\frac{7}{8}$	1	$0\frac{3}{8}$	0	$7\frac{7}{8}$	2	$0\frac{1}{2}\frac{5}{6}$	0	$11\frac{7}{8}$	3	$1\frac{1}{4}$	1	$3\frac{7}{8}$	4	$2\frac{1}{16}$
0	4	1	$0\frac{3}{4}$	0	8	2	$1\frac{5}{16}$	1	0	3	$1\frac{7}{8}$	1	4	4	$2\frac{7}{16}$
0	$4\frac{1}{8}$	1	$1\frac{1}{4}$	0	$8\frac{1}{8}$	2	$1\frac{1}{2}\frac{1}{6}$	1	$0\frac{1}{8}$	3	$2\frac{1}{4}$	1	$4\frac{1}{8}$	4	$2\frac{1}{2}\frac{3}{6}$
0	$4\frac{1}{4}$	1	$1\frac{1}{2}$	0	$8\frac{1}{4}$	2	$2\frac{1}{16}$	1	$0\frac{1}{4}$	3	$2\frac{1}{2}\frac{1}{6}$	1	$4\frac{1}{4}$	4	$3\frac{3}{16}$
0	$4\frac{3}{8}$	1	$1\frac{1}{2}\frac{5}{6}$	0	$8\frac{3}{8}$	2	$2\frac{1}{4}$	1	$0\frac{3}{8}$	3	$3\frac{1}{16}$	1	$4\frac{3}{8}$	4	$3\frac{1}{8}$
0	$4\frac{1}{2}$	1	$2\frac{5}{16}$	0	$8\frac{1}{2}$	2	$2\frac{7}{8}$	1	$0\frac{1}{2}$	3	$3\frac{7}{16}$	1	$4\frac{1}{2}$	4	4
0	$4\frac{5}{8}$	1	$2\frac{1}{2}\frac{1}{6}$	0	$8\frac{5}{8}$	2	$3\frac{1}{4}$	1	$0\frac{5}{8}$	3	$3\frac{1}{2}\frac{3}{6}$	1	$4\frac{5}{8}$	4	$4\frac{3}{16}$
0	$4\frac{3}{4}$	1	$3\frac{1}{16}$	0	$8\frac{3}{4}$	2	$3\frac{5}{8}$	1	$0\frac{3}{4}$	3	$4\frac{1}{4}$	1	$4\frac{3}{4}$	4	$4\frac{1}{2}\frac{3}{6}$
0	$4\frac{7}{8}$	1	$3\frac{1}{2}$	0	$8\frac{7}{8}$	2	$4\frac{1}{16}$	1	$0\frac{7}{8}$	3	$4\frac{5}{8}$	1	$4\frac{7}{8}$	4	$5\frac{3}{16}$

FOR PIPE MAKING.—Thickness of Plate $\frac{1}{16}$ of an Inch.

Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
1	5	4	$5\frac{9}{16}$	1	9	5	$6\frac{1}{8}$	2	1	6	$6\frac{1}{16}$	2	5	7	$7\frac{1}{4}$
1	$5\frac{1}{8}$	4	$5\frac{1}{16}$	1	$9\frac{1}{8}$	5	$6\frac{9}{16}$	2	$1\frac{1}{8}$	6	$7\frac{1}{8}$	2	$5\frac{1}{8}$	7	$7\frac{1}{16}$
1	$5\frac{1}{4}$	4	$6\frac{3}{8}$	1	$9\frac{1}{4}$	5	$6\frac{1}{16}$	2	$1\frac{1}{4}$	6	$7\frac{1}{4}$	2	$5\frac{1}{4}$	7	8
1	$5\frac{3}{8}$	4	$6\frac{1}{4}$	1	$9\frac{3}{8}$	5	$7\frac{5}{16}$	2	$1\frac{3}{8}$	6	$7\frac{3}{8}$	2	$5\frac{3}{8}$	7	$8\frac{7}{16}$
1	$5\frac{1}{2}$	4	$7\frac{1}{8}$	1	$9\frac{1}{2}$	5	$7\frac{1}{4}$	2	$1\frac{1}{2}$	6	$8\frac{1}{4}$	2	$5\frac{1}{2}$	7	$8\frac{3}{16}$
1	$5\frac{5}{8}$	4	$7\frac{9}{16}$	1	$9\frac{5}{8}$	5	$8\frac{1}{8}$	2	$1\frac{5}{8}$	6	$8\frac{1}{16}$	2	$5\frac{5}{8}$	7	$9\frac{1}{4}$
1	$5\frac{3}{4}$	4	$7\frac{1}{16}$	1	$9\frac{3}{4}$	5	$8\frac{1}{4}$	2	$1\frac{3}{4}$	6	$9\frac{1}{16}$	2	$5\frac{3}{4}$	7	$9\frac{5}{8}$
1	$5\frac{7}{8}$	4	$8\frac{5}{16}$	1	$9\frac{7}{8}$	5	$8\frac{5}{8}$	2	$1\frac{7}{8}$	6	$9\frac{7}{16}$	2	$5\frac{7}{8}$	7	10
1	6	4	$8\frac{1}{16}$	1	10	5	$9\frac{1}{4}$	2	2	6	$9\frac{7}{8}$	2	6	7	$10\frac{7}{16}$
1	$6\frac{1}{8}$	4	$9\frac{1}{8}$	1	$10\frac{1}{8}$	5	$9\frac{1}{16}$	2	$2\frac{1}{8}$	6	$10\frac{1}{4}$	2	$6\frac{1}{8}$	7	$10\frac{3}{16}$
1	$6\frac{1}{4}$	4	$9\frac{1}{2}$	1	$10\frac{1}{4}$	5	$10\frac{1}{16}$	2	$2\frac{1}{4}$	6	$10\frac{5}{8}$	2	$6\frac{1}{4}$	7	$11\frac{3}{16}$
1	$6\frac{3}{8}$	4	$9\frac{7}{8}$	1	$10\frac{3}{8}$	5	$10\frac{7}{16}$	2	$2\frac{3}{8}$	6	11	2	$6\frac{3}{8}$	7	$11\frac{9}{16}$
1	$6\frac{1}{2}$	4	$10\frac{5}{16}$	1	$10\frac{1}{2}$	5	$10\frac{7}{8}$	2	$2\frac{1}{2}$	6	$11\frac{7}{16}$	2	$6\frac{1}{2}$	8	0
1	$6\frac{5}{8}$	4	$10\frac{1}{16}$	1	$10\frac{5}{8}$	5	$11\frac{1}{4}$	2	$2\frac{5}{8}$	6	$11\frac{3}{8}$	2	$6\frac{5}{8}$	8	$0\frac{3}{8}$
1	$6\frac{3}{4}$	4	$11\frac{1}{16}$	1	$10\frac{3}{4}$	5	$11\frac{5}{8}$	2	$2\frac{3}{4}$	7	$0\frac{3}{16}$	2	$6\frac{3}{4}$	8	$0\frac{3}{4}$
1	$6\frac{7}{8}$	4	$11\frac{7}{16}$	1	$10\frac{7}{8}$	6	0	2	$2\frac{7}{8}$	7	$0\frac{3}{8}$	2	$6\frac{7}{8}$	8	$1\frac{3}{16}$
1	7	4	$11\frac{3}{8}$	1	11	6	$0\frac{7}{16}$	2	3	7	1	2	7	8	$1\frac{9}{16}$
1	$7\frac{1}{8}$	5	$0\frac{1}{4}$	1	$11\frac{1}{8}$	6	$0\frac{3}{16}$	2	$3\frac{1}{8}$	7	$1\frac{3}{8}$	2	$7\frac{1}{8}$	8	$1\frac{5}{8}$
1	$7\frac{1}{4}$	5	$0\frac{5}{8}$	1	$11\frac{1}{4}$	6	$1\frac{3}{16}$	2	$3\frac{1}{4}$	7	$1\frac{3}{4}$	2	$7\frac{1}{4}$	8	$2\frac{5}{8}$
1	$7\frac{3}{8}$	5	$1\frac{1}{16}$	1	$11\frac{3}{8}$	6	$1\frac{5}{8}$	2	$3\frac{3}{8}$	7	$2\frac{3}{16}$	2	$7\frac{3}{8}$	8	$2\frac{3}{4}$
1	$7\frac{1}{2}$	5	$1\frac{7}{16}$	1	$11\frac{1}{2}$	6	2	2	$3\frac{1}{2}$	7	$2\frac{9}{16}$	2	$7\frac{1}{2}$	8	$3\frac{1}{8}$
1	$7\frac{5}{8}$	5	$1\frac{3}{8}$	1	$11\frac{5}{8}$	6	$2\frac{3}{8}$	2	$3\frac{5}{8}$	7	$2\frac{15}{16}$	2	$7\frac{5}{8}$	8	$3\frac{1}{2}$
1	$7\frac{3}{4}$	5	$2\frac{3}{16}$	1	$11\frac{3}{4}$	6	$2\frac{3}{4}$	2	$3\frac{3}{4}$	7	$3\frac{3}{8}$	2	$7\frac{3}{4}$	8	$3\frac{15}{16}$
1	$7\frac{7}{8}$	5	$2\frac{5}{8}$	1	$11\frac{7}{8}$	6	$3\frac{3}{16}$	2	$3\frac{7}{8}$	7	$3\frac{3}{4}$	2	$7\frac{7}{8}$	8	$4\frac{5}{16}$
1	8	5	3	2	0	6	$3\frac{9}{16}$	2	4	7	$4\frac{1}{8}$	2	8	8	$4\frac{1}{16}$
1	$8\frac{1}{8}$	5	$3\frac{3}{8}$	2	$0\frac{1}{8}$	6	$3\frac{15}{16}$	2	$4\frac{1}{8}$	7	$4\frac{1}{8}$	2	$8\frac{1}{8}$	8	$5\frac{1}{16}$
1	$8\frac{1}{4}$	5	$3\frac{3}{16}$	2	$0\frac{1}{4}$	6	$4\frac{3}{8}$	2	$4\frac{1}{4}$	7	$4\frac{15}{16}$	2	$8\frac{1}{4}$	8	$5\frac{1}{2}$
1	$8\frac{3}{8}$	5	$4\frac{5}{16}$	2	$0\frac{3}{8}$	6	$4\frac{3}{4}$	2	$4\frac{3}{8}$	7	$5\frac{5}{16}$	2	$8\frac{3}{8}$	8	$5\frac{7}{8}$
1	$8\frac{1}{2}$	5	$4\frac{9}{16}$	2	$0\frac{1}{2}$	6	$5\frac{1}{8}$	2	$4\frac{1}{2}$	7	$5\frac{1}{16}$	2	$8\frac{1}{2}$	8	$6\frac{1}{4}$
1	$8\frac{5}{8}$	5	$4\frac{13}{16}$	2	$0\frac{5}{8}$	6	$5\frac{1}{2}$	2	$4\frac{5}{8}$	7	$6\frac{1}{16}$	2	$8\frac{5}{8}$	8	$6\frac{1}{16}$
1	$8\frac{3}{4}$	5	$5\frac{3}{8}$	2	$0\frac{3}{4}$	6	$5\frac{15}{16}$	2	$4\frac{3}{4}$	7	$6\frac{1}{4}$	2	$8\frac{3}{4}$	8	$7\frac{1}{16}$
1	$8\frac{7}{8}$	5	$5\frac{1}{4}$	2	$0\frac{7}{8}$	6	$6\frac{5}{16}$	2	$4\frac{7}{8}$	7	$6\frac{7}{16}$	2	$8\frac{7}{8}$	8	$7\frac{7}{16}$

TABLE XXI.

FOR PIPE MAKING.—Thickness of Plate $\frac{1}{8}$ of an Inch.

Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
0	1	0	$3\frac{1}{8}$	0	5	1	4	0	9	2	$4\frac{3}{8}$	1	1	3	$5\frac{1}{4}$
0	$1\frac{1}{8}$	0	$3\frac{7}{8}$	0	$5\frac{1}{8}$	1	$4\frac{1}{2}$	0	$9\frac{1}{8}$	2	5	1	$1\frac{1}{8}$	3	$5\frac{5}{8}$
0	$1\frac{1}{4}$	0	$4\frac{1}{4}$	0	$5\frac{1}{4}$	1	$4\frac{7}{8}$	0	$9\frac{1}{4}$	2	$5\frac{1}{2}$	1	$1\frac{1}{4}$	3	6
0	$1\frac{3}{8}$	0	$4\frac{5}{8}$	0	$5\frac{3}{8}$	1	$5\frac{1}{4}$	0	$9\frac{3}{8}$	2	$5\frac{7}{8}$	1	$1\frac{3}{8}$	3	$6\frac{3}{8}$
0	$1\frac{1}{2}$	0	5	0	$5\frac{1}{2}$	1	$5\frac{5}{8}$	0	$9\frac{1}{2}$	2	$6\frac{1}{4}$	1	$1\frac{1}{2}$	3	$6\frac{3}{4}$
0	$1\frac{5}{8}$	0	$5\frac{3}{8}$	0	$5\frac{5}{8}$	1	6	0	$9\frac{5}{8}$	2	$6\frac{5}{8}$	1	$1\frac{5}{8}$	3	$7\frac{1}{8}$
0	$1\frac{3}{4}$	0	$5\frac{7}{8}$	0	$5\frac{3}{4}$	1	$6\frac{1}{8}$	0	$9\frac{3}{4}$	2	7	1	$1\frac{3}{4}$	3	$7\frac{3}{8}$
0	$1\frac{7}{8}$	0	$6\frac{1}{4}$	0	$5\frac{7}{8}$	1	$6\frac{7}{8}$	0	$9\frac{7}{8}$	2	$7\frac{3}{8}$	1	$1\frac{7}{8}$	3	8
0	2	0	$6\frac{5}{8}$	0	6	1	$7\frac{1}{4}$	0	10	2	$7\frac{3}{4}$	1	2	3	$8\frac{3}{8}$
0	$2\frac{1}{8}$	0	7	0	$6\frac{1}{8}$	1	$7\frac{5}{8}$	0	$10\frac{1}{8}$	2	$8\frac{1}{4}$	1	$2\frac{1}{8}$	3	$8\frac{3}{4}$
0	$2\frac{1}{4}$	0	$7\frac{1}{2}$	0	$6\frac{1}{4}$	1	8	0	$10\frac{1}{4}$	2	$8\frac{5}{8}$	1	$2\frac{1}{4}$	3	$9\frac{1}{8}$
0	$2\frac{3}{8}$	0	$7\frac{7}{8}$	0	$6\frac{3}{8}$	1	$8\frac{3}{8}$	0	$10\frac{3}{8}$	2	9	1	$2\frac{3}{8}$	3	$9\frac{1}{4}$
0	$2\frac{1}{2}$	0	$8\frac{1}{4}$	0	$6\frac{1}{2}$	1	$8\frac{3}{4}$	0	$10\frac{1}{2}$	2	$9\frac{3}{8}$	1	$2\frac{1}{2}$	3	$9\frac{7}{8}$
0	$2\frac{5}{8}$	0	$8\frac{5}{8}$	0	$6\frac{5}{8}$	1	$9\frac{1}{8}$	0	$10\frac{5}{8}$	2	$9\frac{3}{4}$	1	$2\frac{5}{8}$	3	$10\frac{3}{8}$
0	$2\frac{3}{4}$	0	9	0	$6\frac{3}{4}$	1	$9\frac{1}{2}$	0	$10\frac{3}{4}$	2	$10\frac{1}{8}$	1	$2\frac{3}{4}$	3	$10\frac{3}{4}$
0	$2\frac{7}{8}$	0	$9\frac{3}{8}$	0	$6\frac{7}{8}$	1	10	0	$10\frac{7}{8}$	2	$10\frac{1}{2}$	1	$2\frac{7}{8}$	3	$11\frac{1}{8}$
0	3	0	$9\frac{3}{4}$	0	7	1	$10\frac{3}{8}$	0	11	2	$10\frac{7}{8}$	1	3	3	$11\frac{1}{4}$
0	$3\frac{1}{8}$	0	$10\frac{1}{4}$	0	$7\frac{1}{8}$	1	$10\frac{3}{4}$	0	$11\frac{1}{8}$	2	$11\frac{3}{8}$	1	$3\frac{1}{8}$	3	$11\frac{7}{8}$
0	$3\frac{1}{4}$	0	$10\frac{1}{2}$	0	$7\frac{1}{4}$	1	$11\frac{1}{8}$	0	$11\frac{1}{4}$	2	$11\frac{3}{4}$	1	$3\frac{1}{4}$	4	$0\frac{1}{4}$
0	$3\frac{3}{8}$	0	11	0	$7\frac{3}{8}$	1	$11\frac{1}{2}$	0	$11\frac{3}{8}$	3	$0\frac{1}{8}$	1	$3\frac{3}{8}$	4	$0\frac{5}{8}$
0	$3\frac{1}{2}$	0	$11\frac{3}{8}$	0	$7\frac{1}{2}$	1	$11\frac{7}{8}$	0	$11\frac{1}{2}$	3	$0\frac{1}{2}$	1	$3\frac{1}{2}$	4	1
0	$3\frac{5}{8}$	0	$11\frac{3}{4}$	0	$7\frac{5}{8}$	2	$0\frac{3}{8}$	0	$11\frac{5}{8}$	3	$0\frac{7}{8}$	1	$3\frac{5}{8}$	4	$1\frac{3}{8}$
0	$3\frac{3}{4}$	1	$0\frac{1}{8}$	0	$7\frac{3}{4}$	2	$0\frac{3}{4}$	0	$11\frac{3}{4}$	3	$1\frac{1}{4}$	1	$3\frac{3}{4}$	4	$1\frac{7}{8}$
0	$3\frac{7}{8}$	1	$0\frac{1}{2}$	0	$7\frac{7}{8}$	2	$1\frac{1}{8}$	0	$11\frac{7}{8}$	3	$1\frac{5}{8}$	1	$3\frac{7}{8}$	4	$2\frac{1}{4}$
0	4	1	$0\frac{7}{8}$	0	8	2	$1\frac{1}{2}$	1	0	3	2	1	4	4	$2\frac{5}{8}$
0	$4\frac{1}{8}$	1	$1\frac{3}{8}$	0	$8\frac{1}{8}$	2	$1\frac{7}{8}$	1	$0\frac{1}{8}$	3	$2\frac{1}{8}$	1	$4\frac{1}{8}$	4	3
0	$4\frac{1}{4}$	1	$1\frac{3}{4}$	0	$8\frac{1}{4}$	2	$2\frac{3}{8}$	1	$0\frac{1}{4}$	3	$2\frac{7}{8}$	1	$4\frac{1}{4}$	4	$3\frac{3}{8}$
0	$4\frac{3}{8}$	1	$2\frac{1}{8}$	0	$8\frac{3}{8}$	2	$2\frac{3}{4}$	1	$0\frac{3}{8}$	3	$3\frac{1}{4}$	1	$4\frac{3}{8}$	4	$3\frac{3}{4}$
0	$4\frac{1}{2}$	1	$2\frac{1}{2}$	0	$8\frac{1}{2}$	2	$3\frac{1}{8}$	1	$0\frac{1}{2}$	3	$3\frac{5}{8}$	1	$4\frac{1}{2}$	4	$4\frac{1}{8}$
0	$4\frac{5}{8}$	1	$2\frac{7}{8}$	0	$8\frac{5}{8}$	2	$3\frac{1}{2}$	1	$0\frac{5}{8}$	3	4	1	$4\frac{5}{8}$	4	$4\frac{1}{8}$
0	$4\frac{3}{4}$	1	$3\frac{1}{4}$	0	$8\frac{3}{4}$	2	$3\frac{7}{8}$	1	$0\frac{3}{4}$	3	$4\frac{3}{8}$	1	$4\frac{3}{4}$	4	5
0	$4\frac{7}{8}$	1	$3\frac{3}{8}$	0	$8\frac{7}{8}$	2	$4\frac{1}{4}$	1	$0\frac{7}{8}$	3	$4\frac{7}{8}$	1	$4\frac{7}{8}$	4	$5\frac{1}{8}$

FOR PIPE MAKING.—Thickness of Plate $\frac{1}{16}$ of an Inch.

Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
1	5	4	$5\frac{9}{16}$	1	9	5	$6\frac{1}{8}$	2	1	6	$6\frac{1}{16}$	2	5	7	$7\frac{1}{4}$
1	$5\frac{1}{8}$	4	$5\frac{5}{16}$	1	$9\frac{1}{8}$	5	$6\frac{9}{16}$	2	$1\frac{1}{8}$	6	$7\frac{1}{8}$	2	$5\frac{1}{8}$	7	$7\frac{1}{16}$
1	$5\frac{1}{4}$	4	$6\frac{1}{8}$	1	$9\frac{1}{4}$	5	$6\frac{5}{16}$	2	$1\frac{1}{4}$	6	$7\frac{1}{4}$	2	$5\frac{1}{4}$	7	8
1	$5\frac{3}{8}$	4	$6\frac{1}{4}$	1	$9\frac{3}{8}$	5	$7\frac{5}{16}$	2	$1\frac{3}{8}$	6	$7\frac{1}{8}$	2	$5\frac{3}{8}$	7	$8\frac{7}{16}$
1	$5\frac{1}{2}$	4	$7\frac{1}{8}$	1	$9\frac{1}{2}$	5	$7\frac{1}{4}$	2	$1\frac{1}{2}$	6	$8\frac{1}{4}$	2	$5\frac{1}{2}$	7	$8\frac{3}{8}$
1	$5\frac{5}{8}$	4	$7\frac{9}{16}$	1	$9\frac{5}{8}$	5	$8\frac{1}{8}$	2	$1\frac{5}{8}$	6	$8\frac{1}{16}$	2	$5\frac{5}{8}$	7	$9\frac{1}{4}$
1	$5\frac{3}{4}$	4	$7\frac{1}{16}$	1	$9\frac{3}{4}$	5	$8\frac{1}{4}$	2	$1\frac{3}{4}$	6	$9\frac{1}{16}$	2	$5\frac{3}{4}$	7	$9\frac{5}{8}$
1	$5\frac{7}{8}$	4	$8\frac{5}{16}$	1	$9\frac{7}{8}$	5	$8\frac{7}{8}$	2	$1\frac{7}{8}$	6	$9\frac{7}{16}$	2	$5\frac{7}{8}$	7	10
1	6	4	$8\frac{1}{16}$	1	10	5	$9\frac{1}{4}$	2	2	6	$9\frac{7}{8}$	2	6	7	$10\frac{7}{16}$
1	$6\frac{1}{8}$	4	$9\frac{1}{8}$	1	$10\frac{1}{8}$	5	$9\frac{1}{16}$	2	$2\frac{1}{8}$	6	$10\frac{1}{4}$	2	$6\frac{1}{8}$	7	$10\frac{1}{16}$
1	$6\frac{1}{4}$	4	$9\frac{1}{2}$	1	$10\frac{1}{4}$	5	$10\frac{1}{16}$	2	$2\frac{1}{4}$	6	$10\frac{5}{8}$	2	$6\frac{1}{4}$	7	$11\frac{3}{16}$
1	$6\frac{3}{8}$	4	$9\frac{7}{8}$	1	$10\frac{3}{8}$	5	$10\frac{7}{16}$	2	$2\frac{3}{8}$	6	11	2	$6\frac{3}{8}$	7	$11\frac{9}{16}$
1	$6\frac{1}{2}$	4	$10\frac{5}{16}$	1	$10\frac{1}{2}$	5	$10\frac{7}{8}$	2	$2\frac{1}{2}$	6	$11\frac{7}{16}$	2	$6\frac{1}{2}$	8	0
1	$6\frac{5}{8}$	4	$10\frac{1}{16}$	1	$10\frac{5}{8}$	5	$11\frac{1}{4}$	2	$2\frac{5}{8}$	6	$11\frac{3}{16}$	2	$6\frac{5}{8}$	8	$0\frac{3}{8}$
1	$6\frac{3}{4}$	4	$11\frac{1}{16}$	1	$10\frac{3}{4}$	5	$11\frac{5}{8}$	2	$2\frac{3}{4}$	7	$0\frac{9}{16}$	2	$6\frac{3}{4}$	8	$0\frac{3}{4}$
1	$6\frac{7}{8}$	4	$11\frac{7}{16}$	1	$10\frac{7}{8}$	6	0	2	$2\frac{7}{8}$	7	$0\frac{5}{8}$	2	$6\frac{7}{8}$	8	$1\frac{3}{16}$
1	7	4	$11\frac{7}{8}$	1	11	6	$0\frac{7}{16}$	2	3	7	1	2	7	8	$1\frac{9}{16}$
1	$7\frac{1}{8}$	5	$0\frac{1}{4}$	1	$11\frac{1}{8}$	6	$0\frac{3}{16}$	2	$3\frac{1}{8}$	7	$1\frac{1}{8}$	2	$7\frac{1}{8}$	8	$1\frac{5}{16}$
1	$7\frac{1}{4}$	5	$0\frac{3}{8}$	1	$11\frac{1}{4}$	6	$1\frac{3}{16}$	2	$3\frac{1}{4}$	7	$1\frac{1}{4}$	2	$7\frac{1}{4}$	8	$2\frac{1}{16}$
1	$7\frac{3}{8}$	5	$1\frac{1}{16}$	1	$11\frac{3}{8}$	6	$1\frac{5}{8}$	2	$3\frac{3}{8}$	7	$2\frac{3}{16}$	2	$7\frac{3}{8}$	8	$2\frac{1}{4}$
1	$7\frac{1}{2}$	5	$1\frac{7}{16}$	1	$11\frac{1}{2}$	6	2	2	$3\frac{1}{2}$	7	$2\frac{9}{16}$	2	$7\frac{1}{2}$	8	$3\frac{1}{8}$
1	$7\frac{5}{8}$	5	$1\frac{3}{16}$	1	$11\frac{5}{8}$	6	$2\frac{1}{8}$	2	$3\frac{5}{8}$	7	$2\frac{5}{16}$	2	$7\frac{5}{8}$	8	$3\frac{1}{2}$
1	$7\frac{3}{4}$	5	$2\frac{3}{16}$	1	$11\frac{3}{4}$	6	$2\frac{1}{4}$	2	$3\frac{3}{4}$	7	$3\frac{1}{8}$	2	$7\frac{3}{4}$	8	$3\frac{5}{16}$
1	$7\frac{7}{8}$	5	$2\frac{1}{8}$	1	$11\frac{7}{8}$	6	$3\frac{3}{16}$	2	$3\frac{7}{8}$	7	$3\frac{1}{4}$	2	$7\frac{7}{8}$	8	$4\frac{5}{16}$
1	8	5	3	2	0	6	$3\frac{9}{16}$	2	4	7	$4\frac{1}{8}$	2	8	8	$4\frac{1}{16}$
1	$8\frac{1}{8}$	5	$3\frac{1}{8}$	2	$0\frac{1}{8}$	6	$3\frac{5}{16}$	2	$4\frac{1}{8}$	7	$4\frac{1}{8}$	2	$8\frac{1}{8}$	8	$5\frac{1}{16}$
1	$8\frac{1}{4}$	5	$3\frac{3}{16}$	2	$0\frac{1}{4}$	6	$4\frac{1}{8}$	2	$4\frac{1}{4}$	7	$4\frac{5}{16}$	2	$8\frac{1}{4}$	8	$5\frac{1}{2}$
1	$8\frac{3}{8}$	5	$4\frac{3}{16}$	2	$0\frac{3}{8}$	6	$4\frac{3}{4}$	2	$4\frac{3}{8}$	7	$5\frac{5}{16}$	2	$8\frac{3}{8}$	8	$5\frac{7}{8}$
1	$8\frac{1}{2}$	5	$4\frac{9}{16}$	2	$0\frac{1}{2}$	6	$5\frac{1}{8}$	2	$4\frac{1}{2}$	7	$5\frac{1}{16}$	2	$8\frac{1}{2}$	8	$6\frac{1}{4}$
1	$8\frac{5}{8}$	5	$4\frac{1}{16}$	2	$0\frac{5}{8}$	6	$5\frac{1}{4}$	2	$4\frac{5}{8}$	7	$6\frac{1}{16}$	2	$8\frac{5}{8}$	8	$6\frac{1}{16}$
1	$8\frac{3}{4}$	5	$5\frac{3}{8}$	2	$0\frac{3}{4}$	6	$5\frac{5}{16}$	2	$4\frac{3}{4}$	7	$6\frac{1}{2}$	2	$8\frac{3}{4}$	8	$7\frac{1}{16}$
1	$8\frac{7}{8}$	5	$5\frac{3}{4}$	2	$0\frac{7}{8}$	6	$6\frac{5}{16}$	2	$4\frac{7}{8}$	7	$6\frac{7}{8}$	2	$8\frac{7}{8}$	8	$7\frac{7}{16}$

TABLE XXI.

FOR PIPE MAKING.—Thickness of Plate $\frac{1}{8}$ of an Inch.

Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
0	1	0	3 1/2	0	5	1	4	0	9	2	4 3/8	1	1	3	5 1/4
0	1 1/8	0	3 7/8	0	5 1/8	1	4 1/2	0	9 1/8	2	5	1	1 1/8	3	5 5/8
0	1 1/4	0	4 1/4	0	5 1/4	1	4 7/8	0	9 1/4	2	5 1/2	1	1 1/4	3	6
0	1 3/8	0	4 5/8	0	5 3/8	1	5 1/4	0	9 3/8	2	5 7/8	1	1 3/8	3	6 3/8
0	1 1/2	0	5	0	5 1/2	1	5 5/8	0	9 1/2	2	6 1/4	1	1 1/2	3	6 3/4
0	1 5/8	0	5 3/8	0	5 5/8	1	6	0	9 5/8	2	6 5/8	1	1 5/8	3	7 1/8
0	1 3/4	0	5 7/8	0	5 3/4	1	6 1/2	0	9 3/4	2	7	1	1 3/4	3	7 5/8
0	1 7/8	0	6 1/4	0	5 7/8	1	6 7/8	0	9 7/8	2	7 3/8	1	1 7/8	3	8
0	2	0	6 5/8	0	6	1	7 1/4	0	10	2	7 3/4	1	2	3	8 3/8
0	2 1/8	0	7	0	6 1/8	1	7 5/8	0	10 1/8	2	8 1/4	1	2 1/8	3	8 1/4
0	2 1/4	0	7 1/2	0	6 1/4	1	8	0	10 1/4	2	8 5/8	1	2 1/4	3	9 1/8
0	2 3/8	0	7 7/8	0	6 3/8	1	8 3/8	0	10 3/8	2	9	1	2 3/8	3	9 1/2
0	2 1/2	0	8 1/4	0	6 1/2	1	8 3/4	0	10 1/2	2	9 3/8	1	2 1/2	3	9 7/8
0	2 5/8	0	8 5/8	0	6 5/8	1	9 1/8	0	10 5/8	2	9 3/4	1	2 5/8	3	10 3/8
0	2 3/4	0	9	0	6 3/4	1	9 1/2	0	10 3/4	2	10 1/8	1	2 3/4	3	10 3/4
0	2 7/8	0	9 3/8	0	6 7/8	1	10	0	10 7/8	2	10 1/2	1	2 7/8	3	11 1/8
0	3	0	9 3/4	0	7	1	10 3/8	0	11	2	10 7/8	1	3	3	11 1/2
0	3 1/8	0	10 1/4	0	7 1/8	1	10 3/4	0	11 1/8	2	11 3/8	1	3 1/8	3	11 7/8
0	3 1/4	0	10 1/2	0	7 1/4	1	11 1/8	0	11 1/4	2	11 3/4	1	3 1/4	4	0 1/4
0	3 3/8	0	11	0	7 3/8	1	11 1/2	0	11 3/8	3	0 1/8	1	3 3/8	4	0 5/8
0	3 1/2	0	11 3/8	0	7 1/2	1	11 7/8	0	11 1/2	3	0 1/2	1	3 1/2	4	1
0	3 5/8	0	11 3/4	0	7 5/8	2	0 3/8	0	11 5/8	3	0 7/8	1	3 5/8	4	1 3/8
0	3 3/4	1	0 1/8	0	7 3/4	2	0 3/4	0	11 3/4	3	1 1/4	1	3 3/4	4	1 7/8
0	3 7/8	1	0 1/2	0	7 7/8	2	1 1/8	0	11 7/8	3	1 5/8	1	3 7/8	4	2 1/4
0	4	1	0 7/8	0	8	2	1 1/2	1	0	3	2	1	4	4	2 5/8
0	4 1/8	1	1 3/8	0	8 1/8	2	1 7/8	1	0 1/8	3	2 1/2	1	4 1/8	4	3
0	4 1/4	1	1 3/4	0	8 1/4	2	2 3/8	1	0 1/4	3	2 7/8	1	4 1/4	4	3 3/8
0	4 3/8	1	2 1/8	0	8 3/8	2	2 3/4	1	0 3/8	3	3 1/4	1	4 3/8	4	3 3/4
0	4 1/2	1	2 1/2	0	8 1/2	2	3 1/8	1	0 1/2	3	3 5/8	1	4 1/2	4	4 1/8
0	4 5/8	1	2 7/8	0	8 5/8	2	3 1/2	1	0 5/8	3	4	1	4 5/8	4	4 1/8
0	4 3/4	1	3 1/4	0	8 3/4	2	3 7/8	1	0 3/4	3	4 3/8	1	4 3/4	4	5
0	4 7/8	1	3 5/8	0	8 7/8	2	4 1/4	1	0 7/8	3	4 7/8	1	4 7/8	4	5 3/8

FOR PIPE MAKING.—Thickness of Plate $\frac{1}{8}$ of an Inch.

Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
1	5	4	5¼	1	9	5	6⅝	2	1	6	6⅞	2	5	7	7½
1	5⅛	4	6⅛	1	9⅛	5	6¾	2	1⅛	6	7¼	2	5⅛	7	7⅞
1	5¼	4	6½	1	9¼	5	7⅛	2	1¼	6	7⅝	2	5¼	7	8¼
1	5⅜	4	7	1	9⅜	5	7½	2	1⅜	6	8⅛	2	5⅜	7	8⅝
1	5½	4	7⅜	1	9½	5	8	2	1½	6	8½	2	5½	7	9
1	5⅝	4	7¾	1	9⅝	5	8⅜	2	1⅝	6	8⅞	2	5⅝	7	9⅜
1	5¾	4	8⅛	1	9¾	5	8¼	2	1¾	6	9¼	2	5¾	7	9¼
1	5⅞	4	8½	1	9⅞	5	9⅛	2	1⅞	6	9⅝	2	5⅞	7	10¼
1	6	4	8⅞	1	10	5	9½	2	2	6	10	2	6	7	10⅝
1	6⅛	4	9¼	1	10⅛	5	9⅞	2	2⅛	6	10½	2	6⅛	7	11
1	6¼	4	9⅝	1	10¼	5	10¼	2	2¼	6	10⅞	2	6¼	7	11⅜
1	6⅜	4	10	1	10⅜	5	10⅝	2	2⅜	6	11¼	2	6⅜	7	11¾
1	6½	4	10½	1	10½	5	11	2	2½	6	11⅝	2	6½	8	0⅛
1	6⅝	4	10⅞	1	10⅝	5	11½	2	2⅝	7	0	2	6⅝	8	0½
1	6¾	4	11¼	1	10¾	5	11⅞	2	2¾	7	0⅜	2	6¾	8	1
1	6⅞	4	11⅝	1	10⅞	6	0¼	2	2⅞	7	0¾	2	6⅞	8	1⅜
1	7	5	0	1	11	6	0⅝	2	3	7	1⅛	2	7	8	1¾
1	7⅛	5	0⅜	1	11⅛	6	1	2	3⅛	7	1½	2	7⅛	8	2⅛
1	7¼	5	0⅞	1	11¼	6	1⅜	2	3¼	7	2	2	7¼	8	2½
1	7⅜	5	1¼	1	11⅜	6	1¾	2	3⅜	7	2⅜	2	7⅜	8	2⅞
1	7½	5	1⅝	1	11½	6	2¼	2	3½	7	2¾	2	7½	8	3⅜
1	7⅝	5	2	1	11⅝	6	2⅝	2	3⅝	7	3⅛	2	7⅝	8	3¾
1	7¾	5	2⅜	1	11¾	6	3	2	3¾	7	3½	2	7¾	8	4⅛
1	7⅞	5	2¾	1	11⅞	6	3⅜	2	3⅞	7	3⅞	2	7⅞	8	4½
1	8	5	3⅛	2	0	6	3¾	2	4	7	4⅜	2	8	8	4⅞
1	8⅛	5	3⅜	2	0⅛	6	4⅛	2	4⅛	7	4¾	2	8⅛	8	5¼
1	8¼	5	4	2	0¼	6	4½	2	4¼	7	5⅛	2	8¼	8	5⅝
1	8⅜	5	4⅜	2	0⅜	6	4⅞	2	4⅜	7	5½	2	8⅜	8	6
1	8½	5	4¾	2	0½	6	5⅜	2	4½	7	5⅞	2	8½	8	6½
1	8⅝	5	5⅛	2	0⅝	6	5¾	2	4⅝	7	6¼	2	8⅝	8	6⅞
1	8¾	5	5½	2	0¾	6	6⅛	2	4¾	7	6⅝	2	8¾	8	7¼
1	8⅞	5	5⅞	2	0⅞	6	6½	2	4⅞	7	7	2	8⅞	8	7⅝

TABLE XXII.

FOR PIPE MAKING.—Thickness of Plate $\frac{3}{16}$ of an Inch.

Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
0	1	0	$3\frac{1}{16}$	0	5	1	$4\frac{1}{4}$	0	9	2	$4\frac{3}{16}$	1	1	3	$5\frac{3}{8}$
0	$1\frac{1}{8}$	0	$4\frac{1}{16}$	0	$5\frac{1}{8}$	1	$4\frac{1}{16}$	0	$9\frac{1}{8}$	2	$5\frac{1}{4}$	1	$1\frac{1}{8}$	3	$5\frac{3}{16}$
0	$1\frac{1}{4}$	0	$4\frac{1}{2}$	0	$5\frac{1}{4}$	1	$5\frac{1}{16}$	0	$9\frac{1}{4}$	2	$5\frac{5}{16}$	1	$1\frac{1}{4}$	3	$6\frac{3}{16}$
0	$1\frac{3}{8}$	0	$4\frac{7}{16}$	0	$5\frac{3}{8}$	1	$5\frac{7}{16}$	0	$9\frac{3}{8}$	2	6	1	$1\frac{3}{8}$	3	$6\frac{9}{16}$
0	$1\frac{1}{2}$	0	$5\frac{1}{4}$	0	$5\frac{1}{2}$	1	$5\frac{3}{16}$	0	$9\frac{1}{2}$	2	$6\frac{3}{8}$	1	$1\frac{1}{2}$	3	7
0	$1\frac{5}{8}$	0	$5\frac{1}{16}$	0	$5\frac{5}{8}$	1	$6\frac{1}{4}$	0	$9\frac{5}{8}$	2	$6\frac{3}{16}$	1	$1\frac{5}{8}$	3	$7\frac{3}{8}$
0	$1\frac{3}{4}$	0	$6\frac{1}{16}$	0	$5\frac{3}{4}$	1	$6\frac{5}{8}$	0	$9\frac{3}{4}$	2	$7\frac{3}{16}$	1	$1\frac{3}{4}$	3	$7\frac{3}{4}$
0	$1\frac{7}{8}$	0	$6\frac{7}{16}$	0	$5\frac{7}{8}$	1	7	0	$9\frac{7}{8}$	2	$7\frac{9}{16}$	1	$1\frac{7}{8}$	3	$8\frac{1}{8}$
0	2	0	$6\frac{3}{16}$	0	6	1	$7\frac{7}{16}$	0	10	2	8	1	2	3	$8\frac{9}{16}$
0	$2\frac{1}{8}$	0	$7\frac{1}{4}$	0	$6\frac{1}{8}$	1	$7\frac{3}{16}$	0	$10\frac{1}{8}$	2	$8\frac{3}{8}$	1	$2\frac{1}{8}$	3	$8\frac{5}{16}$
0	$2\frac{1}{4}$	0	$7\frac{5}{8}$	0	$6\frac{1}{4}$	1	$8\frac{3}{16}$	0	$10\frac{1}{4}$	2	$8\frac{3}{4}$	1	$2\frac{1}{4}$	3	$9\frac{5}{16}$
0	$2\frac{3}{8}$	0	8	0	$6\frac{3}{8}$	1	$8\frac{9}{16}$	0	$10\frac{3}{8}$	2	$9\frac{1}{8}$	1	$2\frac{3}{8}$	3	$9\frac{1}{16}$
0	$2\frac{1}{2}$	0	$8\frac{7}{16}$	0	$6\frac{1}{2}$	1	9	0	$10\frac{1}{2}$	2	$9\frac{9}{16}$	1	$2\frac{1}{2}$	3	$10\frac{1}{8}$
0	$2\frac{5}{8}$	0	$8\frac{13}{16}$	0	$6\frac{5}{8}$	1	$9\frac{3}{8}$	0	$10\frac{5}{8}$	2	$9\frac{15}{16}$	1	$2\frac{5}{8}$	3	$10\frac{1}{2}$
0	$2\frac{3}{4}$	0	$9\frac{3}{16}$	0	$6\frac{3}{4}$	1	$9\frac{3}{4}$	0	$10\frac{3}{4}$	2	$10\frac{5}{16}$	1	$2\frac{3}{4}$	3	$10\frac{7}{8}$
0	$2\frac{7}{8}$	0	$9\frac{9}{16}$	0	$6\frac{7}{8}$	1	$10\frac{1}{8}$	0	$10\frac{7}{8}$	2	$10\frac{3}{4}$	1	$2\frac{7}{8}$	3	$11\frac{5}{16}$
0	3	0	10	0	7	1	$10\frac{9}{16}$	0	11	2	$11\frac{1}{8}$	1	3	3	$11\frac{1}{16}$
0	$3\frac{1}{8}$	0	$10\frac{3}{8}$	0	$7\frac{1}{8}$	1	$10\frac{15}{16}$	0	$11\frac{1}{8}$	2	$11\frac{1}{2}$	1	$3\frac{1}{8}$	4	$0\frac{1}{16}$
0	$3\frac{1}{4}$	0	$10\frac{3}{4}$	0	$7\frac{1}{4}$	1	$11\frac{5}{16}$	0	$11\frac{1}{4}$	2	$11\frac{7}{8}$	1	$3\frac{1}{4}$	4	$0\frac{7}{16}$
0	$3\frac{3}{8}$	0	$11\frac{3}{16}$	0	$7\frac{3}{8}$	1	$11\frac{3}{4}$	0	$11\frac{3}{8}$	3	$0\frac{5}{16}$	1	$3\frac{3}{8}$	4	$0\frac{7}{8}$
0	$3\frac{1}{2}$	0	$11\frac{9}{16}$	0	$7\frac{1}{2}$	2	$0\frac{1}{8}$	0	$11\frac{1}{2}$	3	$0\frac{1}{16}$	1	$3\frac{1}{2}$	4	$1\frac{1}{4}$
0	$3\frac{5}{8}$	0	$11\frac{15}{16}$	0	$7\frac{5}{8}$	2	$0\frac{1}{2}$	0	$11\frac{5}{8}$	3	$1\frac{1}{16}$	1	$3\frac{5}{8}$	4	$1\frac{5}{8}$
0	$3\frac{3}{4}$	1	$0\frac{5}{16}$	0	$7\frac{3}{4}$	2	$0\frac{7}{8}$	0	$11\frac{3}{4}$	3	$1\frac{1}{2}$	1	$3\frac{3}{4}$	4	$2\frac{1}{16}$
0	$3\frac{7}{8}$	1	$0\frac{3}{4}$	0	$7\frac{7}{8}$	2	$1\frac{5}{16}$	0	$11\frac{7}{8}$	3	$1\frac{7}{8}$	1	$3\frac{7}{8}$	4	$2\frac{7}{8}$
0	4	1	$1\frac{1}{8}$	0	8	2	$1\frac{3}{16}$	1	0	3	$2\frac{1}{4}$	1	4	4	$2\frac{3}{16}$
0	$4\frac{1}{8}$	1	$1\frac{1}{8}$	0	$8\frac{1}{8}$	2	$2\frac{1}{16}$	1	$0\frac{1}{8}$	3	$2\frac{5}{8}$	1	$4\frac{1}{8}$	4	$3\frac{3}{16}$
0	$4\frac{1}{4}$	1	$1\frac{5}{16}$	0	$8\frac{1}{4}$	2	$2\frac{1}{2}$	1	$0\frac{1}{4}$	3	$3\frac{1}{16}$	1	$4\frac{1}{4}$	4	$3\frac{5}{8}$
0	$4\frac{3}{8}$	1	$2\frac{5}{16}$	0	$8\frac{3}{8}$	2	$2\frac{7}{8}$	1	$0\frac{3}{8}$	3	$3\frac{7}{16}$	1	$4\frac{3}{8}$	4	4
0	$4\frac{1}{2}$	1	$2\frac{1}{16}$	0	$8\frac{1}{2}$	2	$3\frac{1}{4}$	1	$0\frac{1}{2}$	3	$3\frac{3}{16}$	1	$4\frac{1}{2}$	4	$4\frac{3}{8}$
0	$4\frac{5}{8}$	1	$3\frac{1}{16}$	0	$8\frac{5}{8}$	2	$3\frac{5}{8}$	1	$0\frac{5}{8}$	3	$4\frac{1}{4}$	1	$4\frac{5}{8}$	4	$4\frac{13}{16}$
0	$4\frac{3}{4}$	1	$3\frac{1}{2}$	0	$8\frac{3}{4}$	2	$4\frac{1}{16}$	1	$0\frac{3}{4}$	3	$4\frac{5}{8}$	1	$4\frac{3}{4}$	4	$5\frac{3}{16}$
0	$4\frac{7}{8}$	1	$3\frac{7}{8}$	0	$8\frac{7}{8}$	2	$4\frac{7}{16}$	1	$0\frac{7}{8}$	3	5	1	$4\frac{7}{8}$	4	$5\frac{9}{16}$

FOR PIPE MAKING.—Thickness of Plate $\frac{3}{16}$ of an Inch.

Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
1	5	4	$5\frac{5}{16}$	1	9	5	$6\frac{9}{16}$	2	1	6	$7\frac{1}{8}$	2	5	7	$7\frac{1}{16}$
1	$5\frac{1}{8}$	4	$6\frac{3}{8}$	1	$9\frac{1}{8}$	5	$6\frac{5}{16}$	2	$1\frac{1}{8}$	6	$7\frac{1}{2}$	2	$5\frac{1}{8}$	7	8
1	$5\frac{1}{4}$	4	$6\frac{3}{4}$	1	$9\frac{1}{4}$	5	$7\frac{5}{16}$	2	$1\frac{1}{4}$	6	$7\frac{3}{8}$	2	$5\frac{1}{4}$	7	$8\frac{7}{16}$
1	$5\frac{3}{8}$	4	$7\frac{1}{4}$	1	$9\frac{3}{8}$	5	$7\frac{1}{16}$	2	$1\frac{3}{8}$	6	$8\frac{1}{4}$	2	$5\frac{3}{8}$	7	$8\frac{3}{16}$
1	$5\frac{1}{2}$	4	$7\frac{9}{16}$	1	$9\frac{1}{2}$	5	$8\frac{1}{8}$	2	$1\frac{1}{2}$	6	$8\frac{1}{16}$	2	$5\frac{1}{2}$	7	$9\frac{1}{4}$
1	$5\frac{5}{8}$	4	$7\frac{5}{8}$	1	$9\frac{5}{8}$	5	$8\frac{1}{2}$	2	$1\frac{5}{8}$	6	$9\frac{1}{16}$	2	$5\frac{5}{8}$	7	$9\frac{5}{8}$
1	$5\frac{3}{4}$	4	$8\frac{5}{16}$	1	$9\frac{3}{4}$	5	$8\frac{7}{8}$	2	$1\frac{3}{4}$	6	$9\frac{7}{16}$	2	$5\frac{3}{4}$	7	10
1	$5\frac{7}{8}$	4	$8\frac{3}{4}$	1	$9\frac{7}{8}$	5	$9\frac{1}{4}$	2	$1\frac{7}{8}$	6	$9\frac{7}{8}$	2	$5\frac{7}{8}$	7	$10\frac{7}{16}$
1	6	4	$9\frac{1}{8}$	1	10	5	$9\frac{1}{16}$	2	2	6	$10\frac{1}{4}$	2	6	7	$10\frac{3}{8}$
1	$6\frac{1}{8}$	4	$9\frac{1}{2}$	1	$10\frac{1}{8}$	5	$10\frac{1}{16}$	2	$2\frac{1}{8}$	6	$10\frac{3}{8}$	2	$6\frac{1}{8}$	7	$11\frac{3}{16}$
1	$6\frac{1}{4}$	4	$9\frac{7}{8}$	1	$10\frac{1}{4}$	5	$10\frac{7}{16}$	2	$2\frac{1}{4}$	6	11	2	$6\frac{1}{4}$	7	$11\frac{9}{16}$
1	$6\frac{3}{8}$	4	$10\frac{5}{16}$	1	$10\frac{3}{8}$	5	$10\frac{7}{8}$	2	$2\frac{3}{8}$	6	$11\frac{7}{16}$	2	$6\frac{3}{8}$	8	0
1	$6\frac{1}{2}$	4	$10\frac{1}{8}$	1	$10\frac{1}{2}$	5	$11\frac{1}{4}$	2	$2\frac{1}{2}$	6	$11\frac{3}{8}$	2	$6\frac{1}{2}$	8	$0\frac{3}{8}$
1	$6\frac{5}{8}$	4	$11\frac{1}{16}$	1	$10\frac{5}{8}$	5	$11\frac{5}{8}$	2	$2\frac{5}{8}$	7	$0\frac{3}{16}$	2	$6\frac{5}{8}$	8	$0\frac{3}{4}$
1	$6\frac{3}{4}$	4	$11\frac{7}{16}$	1	$10\frac{3}{4}$	6	0	2	$2\frac{3}{4}$	7	$0\frac{3}{8}$	2	$6\frac{3}{4}$	8	$1\frac{3}{16}$
1	$6\frac{7}{8}$	4	$11\frac{7}{8}$	1	$10\frac{7}{8}$	6	$0\frac{7}{16}$	2	$2\frac{7}{8}$	7	1	2	$6\frac{7}{8}$	8	$1\frac{9}{16}$
1	7	5	$0\frac{1}{4}$	1	11	6	$0\frac{3}{8}$	2	3	7	$1\frac{3}{8}$	2	7	8	$1\frac{5}{8}$
1	$7\frac{1}{8}$	5	$0\frac{5}{8}$	1	$11\frac{1}{8}$	6	$1\frac{3}{16}$	2	$3\frac{1}{8}$	7	$1\frac{3}{4}$	2	$7\frac{1}{8}$	8	$2\frac{5}{16}$
1	$7\frac{1}{4}$	5	$1\frac{1}{16}$	1	$11\frac{1}{4}$	6	$1\frac{5}{8}$	2	$3\frac{1}{4}$	7	$2\frac{3}{16}$	2	$7\frac{1}{4}$	8	$2\frac{3}{4}$
1	$7\frac{3}{8}$	5	$1\frac{7}{16}$	1	$11\frac{3}{8}$	6	2	2	$3\frac{3}{8}$	7	$2\frac{9}{16}$	2	$7\frac{3}{8}$	8	$3\frac{1}{8}$
1	$7\frac{1}{2}$	5	$1\frac{1}{8}$	1	$11\frac{1}{2}$	6	$2\frac{3}{8}$	2	$3\frac{1}{2}$	7	$2\frac{1}{16}$	2	$7\frac{1}{2}$	8	$3\frac{1}{2}$
1	$7\frac{5}{8}$	5	$2\frac{3}{16}$	1	$11\frac{5}{8}$	6	$2\frac{3}{4}$	2	$3\frac{5}{8}$	7	$3\frac{3}{8}$	2	$7\frac{5}{8}$	8	$3\frac{5}{16}$
1	$7\frac{3}{4}$	5	$2\frac{5}{8}$	1	$11\frac{3}{4}$	6	$3\frac{3}{16}$	2	$3\frac{3}{4}$	7	$3\frac{3}{4}$	2	$7\frac{3}{4}$	8	$4\frac{5}{16}$
1	$7\frac{7}{8}$	5	3	1	$11\frac{7}{8}$	6	$3\frac{9}{16}$	2	$3\frac{7}{8}$	7	$4\frac{1}{8}$	2	$7\frac{7}{8}$	8	$4\frac{1}{16}$
1	8	5	$3\frac{3}{8}$	2	0	6	$3\frac{5}{16}$	2	4	7	$4\frac{1}{8}$	2	8	8	$5\frac{1}{16}$
1	$8\frac{1}{8}$	5	$3\frac{3}{4}$	2	$0\frac{1}{8}$	6	$4\frac{3}{8}$	2	$4\frac{1}{8}$	7	$4\frac{5}{16}$	2	$8\frac{1}{8}$	8	$5\frac{1}{8}$
1	$8\frac{1}{4}$	5	$4\frac{3}{16}$	2	$0\frac{1}{4}$	6	$4\frac{3}{4}$	2	$4\frac{1}{4}$	7	$5\frac{5}{16}$	2	$8\frac{1}{4}$	8	$5\frac{7}{8}$
1	$8\frac{3}{8}$	5	$4\frac{9}{16}$	2	$0\frac{3}{8}$	6	$5\frac{1}{8}$	2	$4\frac{3}{8}$	7	$5\frac{1}{16}$	2	$8\frac{3}{8}$	8	$6\frac{1}{4}$
1	$8\frac{1}{2}$	5	$4\frac{1}{16}$	2	$0\frac{1}{2}$	6	$5\frac{1}{8}$	2	$4\frac{1}{2}$	7	$6\frac{1}{16}$	2	$8\frac{1}{2}$	8	$6\frac{1}{16}$
1	$8\frac{5}{8}$	5	$5\frac{3}{16}$	2	$0\frac{5}{8}$	6	$5\frac{5}{16}$	2	$4\frac{5}{8}$	7	$6\frac{1}{4}$	2	$8\frac{5}{8}$	8	$7\frac{1}{16}$
1	$8\frac{3}{4}$	5	$5\frac{3}{4}$	2	$0\frac{3}{4}$	6	$6\frac{5}{16}$	2	$4\frac{3}{4}$	7	$6\frac{7}{8}$	2	$8\frac{3}{4}$	8	$7\frac{7}{16}$
1	$8\frac{7}{8}$	5	$6\frac{1}{4}$	2	$0\frac{7}{8}$	6	$6\frac{1}{16}$	2	$4\frac{7}{8}$	7	$7\frac{1}{4}$	2	$8\frac{7}{8}$	8	$7\frac{3}{16}$

TABLE XXIII.

FOR PIPE MAKING.—Thickness of Plate ¼ of an Inch.

Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	Ft.	IN.	FT.	IN.
0	1	0	3 7/8	0	5	1	4 1/2	0	9	2	5	1	1	3	5 5/8
0	1 1/8	0	4 1/4	0	5 1/8	1	4 7/8	0	9 1/8	2	5 1/2	1	1 1/8	3	6
0	1 1/4	0	4 5/8	0	5 1/4	1	5 1/4	0	9 1/4	2	5 7/8	1	1 1/4	3	6 3/8
0	1 3/8	0	5	0	5 3/8	1	5 5/8	0	9 3/8	2	6 1/4	1	1 3/8	3	6 3/4
0	1 1/2	0	5 3/8	0	5 1/2	1	6	0	9 1/2	2	6 5/8	1	1 1/2	3	7 1/8
0	1 5/8	0	5 7/8	0	5 5/8	1	6 1/2	0	9 5/8	2	7	1	1 5/8	3	7 5/8
0	1 3/4	0	6 1/4	0	5 3/4	1	6 7/8	0	9 3/4	2	7 3/8	1	1 3/4	3	8
0	1 7/8	0	6 5/8	0	5 7/8	1	7 1/4	0	9 7/8	2	7 3/4	1	1 7/8	3	8 3/8
0	2	0	7	0	6	1	7 5/8	0	10	2	8 1/4	1	2	3	8 3/4
0	2 1/8	0	7 1/2	0	6 1/8	1	8	0	10 1/8	2	8 5/8	1	2 1/8	3	9 1/8
0	2 1/4	0	7 7/8	0	6 1/4	1	8 3/8	0	10 1/4	2	9	1	2 1/4	3	9 1/2
0	2 3/8	0	8 1/4	0	6 3/8	1	8 3/4	0	10 3/8	2	9 3/8	1	2 3/8	3	9 7/8
0	2 1/2	0	8 5/8	0	6 1/2	1	9 1/8	0	10 1/2	2	9 3/4	1	2 1/2	3	10 3/8
0	2 5/8	0	9	0	6 5/8	1	9 1/2	0	10 5/8	2	10 1/8	1	2 5/8	3	10 3/4
0	2 3/4	0	9 3/8	0	6 3/4	1	10	0	10 3/4	2	10 1/2	1	2 3/4	3	11 1/8
0	2 7/8	0	9 3/4	0	6 7/8	1	10 3/8	0	10 7/8	2	10 7/8	1	2 7/8	3	11 1/2
0	3	0	10 1/4	0	7	1	10 3/4	0	11	2	11 3/8	1	3	3	11 7/8
0	3 1/8	0	10 1/2	0	7 1/8	1	11 1/4	0	11 1/8	2	11 3/4	1	3 1/8	4	0 1/4
0	3 1/4	0	11	0	7 1/4	1	11 1/2	0	11 1/4	3	0 1/8	1	3 1/4	4	0 5/8
0	3 3/8	0	11 3/8	0	7 3/8	1	11 7/8	0	11 3/8	3	0 1/2	1	3 3/8	4	1
0	3 1/2	0	11 3/4	0	7 1/2	2	0 3/8	0	11 1/2	3	0 7/8	1	3 1/2	4	1 3/8
0	3 5/8	1	0 1/8	0	7 5/8	2	0 3/4	0	11 5/8	3	1 1/4	1	3 5/8	4	1 7/8
0	3 3/4	1	0 1/2	0	7 3/4	2	1 1/8	0	11 3/4	3	1 5/8	1	3 3/4	4	2 1/4
0	3 7/8	1	0 7/8	0	7 7/8	2	1 1/4	0	11 7/8	3	2	1	3 7/8	4	2 5/8
0	4	1	1 3/8	0	8	2	1 7/8	1	0	3	2 1/2	1	4	4	3
0	4 1/8	1	1 3/4	0	8 1/8	2	2 3/8	1	0 1/8	3	2 7/8	1	4 1/8	4	3 3/8
0	4 1/4	1	2 1/8	0	8 1/4	2	2 3/4	1	0 1/4	3	3 1/4	1	4 1/4	4	3 3/4
0	4 3/8	1	2 1/2	0	8 3/8	2	3 1/8	1	0 3/8	3	3 5/8	1	4 3/8	4	4 1/8
0	4 1/2	1	2 7/8	0	8 1/2	2	3 1/2	1	0 1/2	3	4	1	4 1/2	4	4 1/2
0	4 5/8	1	3 1/4	0	8 5/8	2	3 7/8	1	0 5/8	3	4 3/8	1	4 5/8	4	5
0	4 3/4	1	3 5/8	0	8 3/4	2	4 1/4	1	0 3/4	3	4 7/8	1	4 3/4	4	5 3/8
0	4 7/8	1	4	0	8 7/8	2	4 5/8	1	0 7/8	3	5 1/4	1	4 7/8	4	5 3/4

FOR PIPE MAKING.—Thickness of Plate ¼ of an Inch.

Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
1	5	4	6⅛	1	9	5	6¾	2	1	6	7¼	2	5	7	7⅞
1	5⅛	4	6½	1	9⅛	5	7⅛	2	1⅛	6	7⅝	2	5⅛	7	8¼
1	5¼	4	7	1	9¼	5	7½	2	1¼	6	8⅛	2	5¼	7	8⅝
1	5⅜	4	7⅜	1	9⅜	5	8	2	1⅜	6	8½	2	5⅜	7	9
1	5½	4	7¾	1	9½	5	8⅜	2	1½	6	8⅞	2	5½	7	9⅜
1	5⅝	4	8⅛	1	9⅝	5	8¾	2	1⅝	6	9¼	2	5⅝	7	9¾
1	5¾	4	8½	1	9¾	5	9⅛	2	1¾	6	9⅝	2	5¾	7	10¼
1	5⅞	4	8⅞	1	9⅞	5	9½	2	1⅞	6	10	2	5⅞	7	10⅝
1	6	4	9¼	1	10	5	9⅞	2	2	6	10⅛	2	6	7	11
1	6⅛	4	9⅝	1	10⅛	5	10¼	2	2⅛	6	10⅞	2	6⅛	7	11⅜
1	6¼	4	10	1	10¼	5	10⅝	2	2¼	6	11¼	2	6¼	7	11¾
1	6⅜	4	10½	1	10⅜	5	11	2	2⅜	6	11⅝	2	6⅜	8	0⅛
1	6½	4	10⅞	1	10½	5	11½	2	2½	7	0	2	6½	8	0⅛
1	6⅝	4	11¼	1	10⅝	5	11⅞	2	2⅝	7	0⅜	2	6⅝	8	1
1	6¾	4	11⅝	1	10¾	6	0¼	2	2¾	7	0¾	2	6¾	8	1⅜
1	6⅞	5	0	1	10⅞	6	0⅝	2	2⅞	7	1⅛	2	6⅞	8	1¾
1	7	5	0⅜	1	11	6	1	2	3	7	1½	2	7	8	2⅛
1	7⅛	5	0⅞	1	11⅛	6	1⅜	2	3⅛	7	2	2	7⅛	8	2¼
1	7¼	5	1¼	1	11¼	6	1¾	2	3¼	7	2⅜	2	7¼	8	2⅞
1	7⅜	5	1⅝	1	11⅜	6	2¼	2	3⅜	7	2¾	2	7⅜	8	3⅜
1	7½	5	2	1	11½	6	2⅝	2	3½	7	3⅛	2	7½	8	3¾
1	7⅝	5	2⅜	1	11⅝	6	3	2	3⅝	7	3½	2	7⅝	8	4⅛
1	7¾	5	2¾	1	11¾	6	3⅜	2	3¾	7	3⅞	2	7¾	8	4⅜
1	7⅞	5	3⅛	1	11⅞	6	3¾	2	3⅞	7	4⅜	2	7⅞	8	4⅞
1	8	5	3⅝	2	0	6	4⅛	2	4	7	4¾	2	8	8	5¼
1	8⅛	5	4	2	0⅛	6	4½	2	4⅛	7	5⅛	2	8⅛	8	5⅝
1	8¼	5	4⅜	2	0¼	6	4⅞	2	4¼	7	5½	2	8¼	8	6
1	8⅜	5	4¾	2	0⅜	6	5⅜	2	4⅜	7	5⅞	2	8⅜	8	6⅜
1	8½	5	5⅛	2	0½	6	5¾	2	4½	7	6¼	2	8½	8	6⅞
1	8⅝	5	5½	2	0⅝	6	6⅛	2	4⅝	7	6⅝	2	8⅝	8	7¼
1	8¾	5	5⅞	2	0¾	6	6½	2	4¾	7	7	2	8¾	8	7⅝
1	8⅞	5	6⅜	2	0⅞	6	6⅞	2	4⅞	7	7½	2	8⅞	8	8

TABLE XXIV.

FOR PIPE MAKING.—Thickness of Plate $\frac{5}{16}$ of an Inch.

Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
0	1	0	$4\frac{1}{16}$	0	5	1	$4\frac{1}{8}$	0	9	2	$5\frac{1}{4}$	1	1	3	$5\frac{3}{16}$
0	$1\frac{1}{8}$	0	$4\frac{1}{2}$	0	$5\frac{1}{8}$	1	$5\frac{1}{16}$	0	$9\frac{1}{8}$	2	$5\frac{3}{8}$	1	$1\frac{1}{8}$	3	$6\frac{3}{16}$
0	$1\frac{1}{4}$	0	$4\frac{7}{8}$	0	$5\frac{1}{4}$	1	$5\frac{7}{16}$	0	$9\frac{1}{4}$	2	6	1	$1\frac{1}{4}$	3	$6\frac{9}{16}$
0	$1\frac{3}{8}$	0	$5\frac{1}{4}$	0	$5\frac{3}{8}$	1	$5\frac{13}{16}$	0	$9\frac{3}{8}$	2	$6\frac{3}{8}$	1	$1\frac{3}{8}$	3	7
0	$1\frac{1}{2}$	0	$5\frac{1}{16}$	0	$5\frac{1}{2}$	1	$6\frac{1}{4}$	0	$9\frac{1}{2}$	2	$6\frac{13}{16}$	1	$1\frac{1}{2}$	3	$7\frac{3}{8}$
0	$1\frac{5}{8}$	0	$6\frac{1}{16}$	0	$5\frac{5}{8}$	1	$6\frac{3}{8}$	0	$9\frac{5}{8}$	2	$7\frac{3}{16}$	1	$1\frac{5}{8}$	3	$7\frac{3}{4}$
0	$1\frac{3}{4}$	0	$6\frac{7}{16}$	0	$5\frac{3}{4}$	1	7	0	$9\frac{3}{4}$	2	$7\frac{9}{16}$	1	$1\frac{3}{4}$	3	$8\frac{1}{8}$
0	$1\frac{7}{8}$	0	$6\frac{13}{16}$	0	$5\frac{7}{8}$	1	$7\frac{7}{16}$	0	$9\frac{7}{8}$	2	8	1	$1\frac{7}{8}$	3	$8\frac{9}{16}$
0	2	0	$7\frac{1}{4}$	0	6	1	$7\frac{13}{16}$	0	10	2	$8\frac{3}{8}$	1	2	3	$8\frac{15}{16}$
0	$2\frac{1}{8}$	0	$7\frac{7}{8}$	0	$6\frac{1}{8}$	1	$8\frac{3}{16}$	0	$10\frac{1}{8}$	2	$8\frac{3}{4}$	1	$2\frac{1}{8}$	3	$9\frac{3}{8}$
0	$2\frac{1}{4}$	0	8	0	$6\frac{1}{4}$	1	$8\frac{9}{16}$	0	$10\frac{1}{4}$	2	$9\frac{1}{8}$	1	$2\frac{1}{4}$	3	$9\frac{3}{4}$
0	$2\frac{3}{8}$	0	$8\frac{7}{16}$	0	$6\frac{3}{8}$	1	9	0	$10\frac{3}{8}$	2	$9\frac{9}{16}$	1	$2\frac{3}{8}$	3	$10\frac{1}{8}$
0	$2\frac{1}{2}$	0	$8\frac{13}{16}$	0	$6\frac{1}{2}$	1	$9\frac{3}{8}$	0	$10\frac{1}{2}$	2	$9\frac{15}{16}$	1	$2\frac{1}{2}$	3	$10\frac{1}{2}$
0	$2\frac{5}{8}$	0	$9\frac{3}{16}$	0	$6\frac{5}{8}$	1	$9\frac{3}{4}$	0	$10\frac{5}{8}$	2	$10\frac{5}{16}$	1	$2\frac{5}{8}$	3	$10\frac{7}{8}$
0	$2\frac{3}{4}$	0	$9\frac{9}{16}$	0	$6\frac{3}{4}$	1	$10\frac{3}{16}$	0	$10\frac{3}{4}$	2	$10\frac{3}{4}$	1	$2\frac{3}{4}$	3	$11\frac{5}{16}$
0	$2\frac{7}{8}$	0	10	0	$6\frac{7}{8}$	1	$10\frac{9}{16}$	0	$10\frac{7}{8}$	2	$11\frac{1}{8}$	1	$2\frac{7}{8}$	3	$11\frac{13}{16}$
0	3	0	$10\frac{3}{8}$	0	7	1	$10\frac{15}{16}$	0	11	2	$11\frac{1}{2}$	1	3	4	$0\frac{1}{16}$
0	$3\frac{1}{8}$	0	$10\frac{3}{4}$	0	$7\frac{1}{8}$	1	$11\frac{5}{16}$	0	$11\frac{1}{8}$	2	$11\frac{7}{8}$	1	$3\frac{1}{8}$	4	$0\frac{7}{16}$
0	$3\frac{1}{4}$	0	$11\frac{3}{16}$	0	$7\frac{1}{4}$	1	$11\frac{3}{4}$	0	$11\frac{1}{4}$	3	$0\frac{5}{16}$	1	$3\frac{1}{4}$	4	$0\frac{7}{8}$
0	$3\frac{3}{8}$	0	$11\frac{9}{16}$	0	$7\frac{3}{8}$	2	$0\frac{1}{8}$	0	$11\frac{3}{8}$	3	$0\frac{13}{16}$	1	$3\frac{3}{8}$	4	$1\frac{1}{4}$
0	$3\frac{1}{2}$	0	$11\frac{15}{16}$	0	$7\frac{1}{2}$	2	$0\frac{1}{4}$	0	$11\frac{1}{2}$	3	$1\frac{1}{16}$	1	$3\frac{1}{2}$	4	$1\frac{5}{8}$
0	$3\frac{5}{8}$	1	$0\frac{5}{16}$	0	$7\frac{5}{8}$	2	$0\frac{7}{8}$	0	$11\frac{5}{8}$	3	$1\frac{1}{2}$	1	$3\frac{5}{8}$	4	$2\frac{1}{16}$
0	$3\frac{3}{4}$	1	$0\frac{3}{4}$	0	$7\frac{3}{4}$	2	$1\frac{5}{16}$	0	$11\frac{3}{4}$	3	$1\frac{7}{8}$	1	$3\frac{3}{4}$	4	$2\frac{7}{16}$
0	$3\frac{7}{8}$	1	$1\frac{3}{16}$	0	$7\frac{7}{8}$	2	$1\frac{13}{16}$	0	$11\frac{7}{8}$	3	$2\frac{1}{4}$	1	$3\frac{7}{8}$	4	$2\frac{13}{16}$
0	4	1	$1\frac{1}{2}$	0	8	2	$2\frac{1}{16}$	1	0	3	$2\frac{5}{8}$	1	4	4	$3\frac{3}{16}$
0	$4\frac{1}{8}$	1	$1\frac{15}{16}$	0	$8\frac{1}{8}$	2	$2\frac{1}{8}$	1	$0\frac{1}{8}$	3	$3\frac{1}{16}$	1	$4\frac{1}{8}$	4	$3\frac{5}{8}$
0	$4\frac{1}{4}$	1	$2\frac{5}{16}$	0	$8\frac{1}{4}$	2	$2\frac{7}{8}$	1	$0\frac{1}{4}$	3	$3\frac{7}{16}$	1	$4\frac{1}{4}$	4	4
0	$4\frac{3}{8}$	1	$2\frac{13}{16}$	0	$8\frac{3}{8}$	2	$3\frac{1}{4}$	1	$0\frac{3}{8}$	3	$3\frac{13}{16}$	1	$4\frac{3}{8}$	4	$4\frac{3}{8}$
0	$4\frac{1}{2}$	1	$3\frac{1}{16}$	0	$8\frac{1}{2}$	2	$3\frac{5}{8}$	1	$0\frac{1}{2}$	3	$4\frac{3}{16}$	1	$4\frac{1}{2}$	4	$4\frac{13}{16}$
0	$4\frac{5}{8}$	1	$3\frac{1}{2}$	0	$8\frac{5}{8}$	2	$4\frac{1}{16}$	1	$0\frac{5}{8}$	3	$4\frac{5}{8}$	1	$4\frac{5}{8}$	4	$5\frac{3}{16}$
0	$4\frac{3}{4}$	1	$3\frac{7}{8}$	0	$8\frac{3}{4}$	2	$4\frac{7}{16}$	1	$0\frac{3}{4}$	3	5	1	$4\frac{3}{4}$	4	$5\frac{9}{16}$
0	$4\frac{7}{8}$	1	$4\frac{1}{4}$	0	$8\frac{7}{8}$	2	$4\frac{13}{16}$	1	$0\frac{7}{8}$	3	$5\frac{3}{8}$	1	$4\frac{7}{8}$	4	$5\frac{15}{16}$

FOR PIPE MAKING.—Thickness of Plate $\frac{5}{16}$ of an Inch.

Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
1	5	4	$6\frac{3}{8}$	1	9	5	$6\frac{5}{8}$	2	1	6	$7\frac{1}{2}$	2	5	7	8
1	$5\frac{1}{8}$	4	$6\frac{1}{2}$	1	$9\frac{1}{8}$	5	$7\frac{5}{16}$	2	$1\frac{1}{8}$	6	$7\frac{7}{8}$	2	$5\frac{1}{8}$	7	$8\frac{7}{16}$
1	$5\frac{1}{4}$	4	$7\frac{1}{8}$	1	$9\frac{1}{4}$	5	$7\frac{11}{16}$	2	$1\frac{1}{4}$	6	$8\frac{1}{4}$	2	$5\frac{1}{4}$	7	$8\frac{3}{8}$
1	$5\frac{3}{8}$	4	$7\frac{9}{16}$	1	$9\frac{3}{8}$	5	$8\frac{1}{8}$	2	$1\frac{3}{8}$	6	$8\frac{1}{16}$	2	$5\frac{3}{8}$	7	$9\frac{1}{4}$
1	$5\frac{1}{2}$	4	$7\frac{5}{8}$	1	$9\frac{1}{2}$	5	$8\frac{1}{2}$	2	$1\frac{1}{2}$	6	$9\frac{1}{16}$	2	$5\frac{1}{2}$	7	$9\frac{5}{8}$
1	$5\frac{5}{8}$	4	$8\frac{5}{16}$	1	$9\frac{5}{8}$	5	$8\frac{7}{8}$	2	$1\frac{5}{8}$	6	$9\frac{7}{16}$	2	$5\frac{5}{8}$	7	10
1	$5\frac{3}{4}$	4	$8\frac{1}{16}$	1	$9\frac{3}{4}$	5	$9\frac{1}{4}$	2	$1\frac{3}{4}$	6	$9\frac{7}{8}$	2	$5\frac{3}{4}$	7	$10\frac{7}{16}$
1	$5\frac{7}{8}$	4	$9\frac{1}{8}$	1	$9\frac{7}{8}$	5	$9\frac{11}{16}$	2	$1\frac{7}{8}$	6	$10\frac{1}{4}$	2	$5\frac{7}{8}$	7	$10\frac{13}{16}$
1	6	4	$9\frac{1}{2}$	1	10	5	$10\frac{1}{16}$	2	2	6	$10\frac{5}{8}$	2	6	7	$11\frac{3}{16}$
1	$6\frac{1}{8}$	4	$9\frac{7}{8}$	1	$10\frac{1}{8}$	5	$10\frac{7}{16}$	2	$2\frac{1}{8}$	6	11	2	$6\frac{1}{8}$	7	$11\frac{9}{16}$
1	$6\frac{1}{4}$	4	$10\frac{5}{16}$	1	$10\frac{1}{4}$	5	$10\frac{7}{8}$	2	$2\frac{1}{4}$	6	$11\frac{7}{16}$	2	$6\frac{1}{4}$	8	0
1	$6\frac{3}{8}$	4	$10\frac{11}{16}$	1	$10\frac{3}{8}$	5	$11\frac{1}{4}$	2	$2\frac{3}{8}$	6	$11\frac{13}{16}$	2	$6\frac{3}{8}$	8	$0\frac{3}{8}$
1	$6\frac{1}{2}$	4	$11\frac{1}{16}$	1	$10\frac{1}{2}$	5	$11\frac{5}{8}$	2	$2\frac{1}{2}$	7	$0\frac{3}{16}$	2	$6\frac{1}{2}$	8	$0\frac{3}{4}$
1	$6\frac{5}{8}$	4	$11\frac{7}{16}$	1	$10\frac{5}{8}$	6	0	2	$2\frac{5}{8}$	7	$0\frac{5}{8}$	2	$6\frac{5}{8}$	8	$1\frac{3}{16}$
1	$6\frac{3}{4}$	4	$11\frac{7}{8}$	1	$10\frac{3}{4}$	6	$0\frac{7}{16}$	2	$2\frac{3}{4}$	7	1	2	$6\frac{3}{4}$	8	$1\frac{9}{16}$
1	$6\frac{7}{8}$	5	$0\frac{1}{4}$	1	$10\frac{7}{8}$	6	$0\frac{13}{16}$	2	$2\frac{7}{8}$	7	$1\frac{3}{8}$	2	$6\frac{7}{8}$	8	$1\frac{15}{16}$
1	7	5	$0\frac{5}{8}$	1	11	6	$1\frac{3}{16}$	2	3	7	$1\frac{3}{4}$	2	7	8	$2\frac{5}{16}$
1	$7\frac{1}{8}$	5	$1\frac{1}{16}$	1	$11\frac{1}{8}$	6	$1\frac{5}{8}$	2	$3\frac{1}{8}$	7	$2\frac{3}{16}$	2	$7\frac{1}{8}$	8	$2\frac{3}{4}$
1	$7\frac{1}{4}$	5	$1\frac{7}{16}$	1	$11\frac{1}{4}$	6	2	2	$3\frac{1}{4}$	7	$2\frac{9}{16}$	2	$7\frac{1}{4}$	8	$3\frac{1}{8}$
1	$7\frac{3}{8}$	5	$1\frac{13}{16}$	1	$11\frac{3}{8}$	6	$2\frac{3}{8}$	2	$3\frac{3}{8}$	7	$2\frac{15}{16}$	2	$7\frac{3}{8}$	8	$3\frac{1}{4}$
1	$7\frac{1}{2}$	5	$2\frac{3}{16}$	1	$11\frac{1}{2}$	6	$2\frac{3}{4}$	2	$3\frac{1}{2}$	7	$3\frac{3}{8}$	2	$7\frac{1}{2}$	8	$3\frac{15}{16}$
1	$7\frac{5}{8}$	5	$2\frac{5}{8}$	1	$11\frac{3}{8}$	6	$3\frac{3}{16}$	2	$3\frac{5}{8}$	7	$3\frac{3}{4}$	2	$7\frac{5}{8}$	8	$4\frac{5}{16}$
1	$7\frac{3}{4}$	5	3	1	$11\frac{3}{4}$	6	$3\frac{9}{16}$	2	$3\frac{3}{4}$	7	$4\frac{1}{8}$	2	$7\frac{3}{4}$	8	$4\frac{11}{16}$
1	$7\frac{7}{8}$	5	$3\frac{3}{8}$	1	$11\frac{7}{8}$	6	$3\frac{15}{16}$	2	$3\frac{7}{8}$	7	$4\frac{1}{2}$	2	$7\frac{7}{8}$	8	$5\frac{1}{16}$
1	8	5	$3\frac{3}{4}$	2	0	6	$4\frac{3}{8}$	2	4	7	$4\frac{15}{16}$	2	8	8	$5\frac{1}{2}$
1	$8\frac{1}{8}$	5	$4\frac{3}{16}$	2	$0\frac{1}{8}$	6	$4\frac{3}{4}$	2	$4\frac{1}{8}$	7	$5\frac{5}{16}$	2	$8\frac{1}{8}$	8	$5\frac{7}{8}$
1	$8\frac{1}{4}$	5	$4\frac{9}{16}$	2	$0\frac{1}{4}$	6	$5\frac{1}{8}$	2	$4\frac{1}{4}$	7	$5\frac{11}{16}$	2	$8\frac{1}{4}$	8	$6\frac{1}{4}$
1	$8\frac{3}{8}$	5	$4\frac{15}{16}$	2	$0\frac{3}{8}$	6	$5\frac{9}{16}$	2	$4\frac{3}{8}$	7	$6\frac{1}{16}$	2	$8\frac{3}{8}$	8	$6\frac{11}{16}$
1	$8\frac{1}{2}$	5	$5\frac{3}{8}$	2	$0\frac{1}{2}$	6	$5\frac{15}{16}$	2	$4\frac{1}{2}$	7	$6\frac{1}{2}$	2	$8\frac{1}{2}$	8	$7\frac{1}{16}$
1	$8\frac{5}{8}$	5	$5\frac{3}{4}$	2	$0\frac{5}{8}$	6	$6\frac{5}{16}$	2	$4\frac{5}{8}$	7	$6\frac{7}{8}$	2	$8\frac{5}{8}$	8	$7\frac{7}{16}$
1	$8\frac{3}{4}$	5	$6\frac{1}{8}$	2	$0\frac{3}{4}$	6	$6\frac{11}{16}$	2	$4\frac{3}{4}$	7	$7\frac{1}{4}$	2	$8\frac{3}{4}$	8	$7\frac{13}{16}$
1	$8\frac{7}{8}$	5	$6\frac{9}{16}$	2	$0\frac{7}{8}$	6	$7\frac{1}{8}$	2	$4\frac{7}{8}$	7	$7\frac{5}{8}$	2	$8\frac{7}{8}$	8	$8\frac{1}{4}$

TABLE XXV.

FOR PIPE MAKING.—Thickness of $\frac{3}{8}$ Plate of an Inch.

Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
0	1	0	4 1/4	0	5	1	4 7/8	0	9	2	5 1/2	1	1	3	6
0	1 1/8	0	4 5/8	0	5 1/8	1	5 1/4	0	9 1/8	2	5 7/8	1	1 1/8	3	6 3/8
0	1 1/4	0	5	0	5 1/4	1	5 5/8	0	9 1/4	2	6 1/4	1	1 1/4	3	6 3/4
0	1 3/8	0	5 3/8	0	5 3/8	1	6	0	9 3/8	2	6 5/8	1	1 3/8	3	7 1/8
0	1 1/2	0	5 7/8	0	5 1/2	1	6 1/2	0	9 1/2	2	7	1	1 1/2	3	7 5/8
0	1 5/8	0	6 1/4	0	5 5/8	1	6 7/8	0	9 5/8	2	7 3/8	1	1 5/8	3	8
0	1 3/4	0	6 5/8	0	5 3/4	1	7 1/4	0	9 3/4	2	7 3/4	1	1 3/4	3	8 3/8
0	1 7/8	0	7	0	5 7/8	1	7 5/8	0	9 7/8	2	8 1/4	1	1 7/8	3	8 3/4
0	2	0	7 1/2	0	6	1	8	0	10	2	8 5/8	1	2	3	9 1/8
0	2 1/8	0	7 7/8	0	6 1/8	1	8 3/8	0	10 1/8	2	9	1	2 1/8	3	9 1/2
0	2 1/4	0	8 1/4	0	6 1/4	1	8 3/4	0	10 1/4	2	9 3/8	1	2 1/4	3	9 7/8
0	2 3/8	0	8 5/8	0	6 3/8	1	9 1/8	0	10 3/8	2	9 3/4	1	2 3/8	3	10 3/8
0	2 1/2	0	9	0	6 1/2	1	9 1/2	0	10 1/2	2	10 1/8	1	2 1/2	3	10 3/4
0	2 5/8	0	9 3/8	0	6 5/8	1	10	0	10 5/8	2	10 1/2	1	2 5/8	3	11 1/8
0	2 3/4	0	9 3/4	0	6 3/4	1	10 3/8	0	10 3/4	2	10 7/8	1	2 3/4	3	11 1/2
0	2 7/8	0	10 1/4	0	6 7/8	1	10 3/4	0	10 7/8	2	11 3/8	1	2 7/8	3	11 7/8
0	3	0	10 1/2	0	7	1	11 1/8	0	11	2	11 3/4	1	3	4	0 1/4
0	3 1/8	0	11	0	7 1/8	1	11 1/2	0	11 1/8	3	0 1/8	1	3 1/8	4	0 5/8
0	3 1/4	0	11 3/8	0	7 1/4	1	11 7/8	0	11 1/4	3	0 1/2	1	3 1/4	4	1
0	3 3/8	0	11 3/4	0	7 3/8	2	0 3/8	0	11 3/8	3	0 7/8	1	3 3/8	4	1 3/8
0	3 1/2	1	0 1/8	0	7 1/2	2	0 3/4	0	11 1/2	3	1 1/4	1	3 1/2	4	1 7/8
0	3 5/8	1	0 1/2	0	7 5/8	2	1 1/8	0	11 5/8	3	1 5/8	1	3 5/8	4	2 1/4
0	3 3/4	1	0 7/8	0	7 3/4	2	1 1/2	0	11 3/4	3	2	1	3 3/4	4	2 5/8
0	3 7/8	1	1 3/8	0	7 7/8	2	1 7/8	0	11 7/8	3	2 1/2	1	3 7/8	4	3
0	4	1	1 3/4	0	8	2	2 3/8	1	0	3	2 7/8	1	4	4	3 3/8
0	4 1/8	1	2 1/8	0	8 1/8	2	2 3/4	1	0 1/8	3	3 1/4	1	4 1/8	4	3 3/4
0	4 1/4	1	2 1/2	0	8 1/4	2	3 1/8	1	0 1/4	3	3 5/8	1	4 1/4	4	4 1/8
0	4 3/8	1	2 7/8	0	8 3/8	2	3 1/2	1	0 3/8	3	4	1	4 3/8	4	4 1/2
0	4 1/2	1	3 1/4	0	8 1/2	2	3 7/8	1	0 1/2	3	4 3/8	1	4 1/2	4	5
0	4 5/8	1	3 5/8	0	8 5/8	2	4 1/4	1	0 5/8	3	4 7/8	1	4 5/8	4	5 3/8
0	4 3/4	1	4	0	8 3/4	2	4 5/8	1	0 3/4	3	5 1/4	1	4 3/4	4	5 3/4
0	4 7/8	1	4 1/2	0	8 7/8	2	5	1	0 7/8	3	5 5/8	1	4 7/8	4	6 1/8

FOR PIPE MAKING.—Thickness of Plate $\frac{1}{8}$ of an Inch.

Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.		Inside Diameter of Pipe.		Length Between Centres of Rivet Holes.	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
1	5	4	6½	1	9	5	7⅛	2	1	6	7⅝	2	5	7	8¼
1	5⅛	4	7	1	9⅛	5	7½	2	1⅛	6	8⅛	2	5⅛	7	8⅝
1	5¼	4	7⅜	1	9¼	5	8	2	1¼	6	8½	2	5¼	7	9
1	5⅜	4	7¾	1	9⅜	5	8⅜	2	1⅜	6	8⅞	2	5⅜	7	9⅜
1	5½	4	8⅛	1	9½	5	8¾	2	1½	6	9¼	2	5½	7	9¾
1	5⅝	4	8½	1	9⅝	5	9⅛	2	1⅝	6	9⅝	2	5⅝	7	10¼
1	5¾	4	8⅞	1	9¾	5	9½	2	1¾	6	10	2	5¾	7	10⅝
1	5⅞	4	9¼	1	9⅞	5	9⅞	2	1⅞	6	10½	2	5⅞	7	11
1	6	4	9⅝	1	10	5	10¼	2	2	6	10⅞	2	6	7	11⅜
1	6⅛	4	10⅛	1	10⅛	5	10⅝	2	2⅛	6	11¼	2	6⅛	7	11¾
1	6¼	4	10½	1	10¼	5	11	2	2¼	6	11⅝	2	6¼	8	0⅛
1	6⅜	4	10⅞	1	10⅜	5	11½	2	2⅜	7	0	2	6⅜	8	0½
1	6½	4	11¼	1	10½	5	11⅞	2	2½	7	0⅜	2	6½	8	1
1	6⅝	4	11⅝	1	10⅝	6	0¼	2	2⅝	7	0¾	2	6⅝	8	1⅜
1	6¾	5	0	1	10¾	6	0⅝	2	2¾	7	1⅛	2	6¾	8	1¾
1	6⅞	5	0⅜	1	10⅞	6	1	2	2⅞	7	1½	2	6⅞	8	2⅛
1	7	5	0⅞	1	11	6	1⅜	2	3	7	2	2	7	8	2½
1	7⅛	5	1¼	1	11⅛	6	1¾	2	3⅛	7	2⅜	2	7⅛	8	2⅞
1	7¼	5	1⅝	1	11¼	6	2¼	2	3¼	7	2¾	2	7¼	8	3⅜
1	7⅜	5	2	1	11⅜	6	2⅝	2	3⅜	7	3⅛	2	7⅜	8	3¾
1	7½	5	2⅜	1	11½	6	3	2	3½	7	3½	2	7½	8	4⅛
1	7⅝	5	2¾	1	11⅝	6	3⅜	2	3⅝	7	3⅞	2	7⅝	8	4½
1	7¾	5	3⅛	1	11¾	6	3¾	2	3¾	7	4⅜	2	7¾	8	4⅞
1	7⅞	5	3⅜	1	11⅞	6	4⅛	2	3⅞	7	4¾	2	7⅞	8	5¼
1	8	5	4	2	0	6	4½	2	4	7	5⅛	2	8	8	5⅝
1	8⅛	5	4⅜	2	0⅛	6	4⅞	2	4⅛	7	5½	2	8⅛	8	6
1	8¼	5	4¾	2	0¼	6	5⅜	2	4¼	7	5⅞	2	8¼	8	6½
1	8⅜	5	5⅛	2	0⅜	6	5¾	2	4⅜	7	6¼	2	8⅜	8	6⅞
1	8½	5	5½	2	0½	6	6⅛	2	4½	7	6⅝	2	8½	8	7¼
1	8⅝	5	5⅞	2	0⅝	6	6½	2	4⅝	7	7	2	8⅝	8	7⅝
1	8¾	5	6⅜	2	0¾	6	6⅞	2	4¾	7	7½	2	8¾	8	8
1	8⅞	5	6¾	2	0⅞	6	7¼	2	4⅞	7	7⅞	2	8⅞	8	8⅜

THE BOILER-MAKERS'

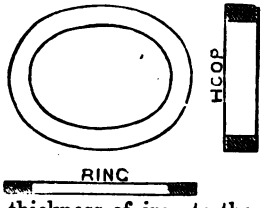
AND

IRON SHIP-BUILDERS' COMPANION.

SECTION IV.

Tables of Diameters and Circumferences for the formation of Plain Hoops and Rings.

FIG. 1.



RULE 1.—Add the thickness of iron to the given inside diameter of hoop, for a new diameter, then refer to the table for the circumference or lengths required.

EXAMPLE.—What length of iron ¾ of an inch thick will form a hoop, whose inside diameter equals 5 feet 10 inches? To 5 feet 10 inches add ¾ of an inch, which will make 5 feet 10¾ inches, the new diameter. In table 26, page 135, opposite 5 ft. 10¾ in. diameter, is 18 feet 6¼ inches, the circumference or length required.

RULE 2.—Add the breadth of iron to the given inside diameter of ring, for a new diameter, then refer to the table for the circumference or length required.

EXAMPLE.—What length of iron 3 inches wide will form a ring, the inside diameter being 2 feet 6 inches? To 2 feet 6 inches, add 3 inches, which will make 2 feet 9 inches, the new diameter. In table 26, page 133, opposite 2 feet 9 inches diameter, is 8 ft. 7⅛ in., the circumference or length required.

OVAL HOOPS AND RINGS.

RULE 3.—Take half the sum of the given inside axis as a diameter, then add the thickness or breadth of the iron as may be required for a hoop or ring for a new diameter, and in the table of diameters and circumferences the required length will be found.

EXAMPLE.—Required, the circumference of an oval hoop, whose inside axis are 1 foot 6 inches, and 1 foot 1½ inches, the thickness of iron being ½ inch.

	1 foot 6 inches.		
	1 ,, 1½ ,,		
2	2 ,, 7½ ,,		
	1 ,, 3¾ ,,		
	½ ,,		thickness of iron.
	1 ,, 4¼ ,,		diameter required.

In table 26, page 131, opposite 1 foot 4¼ inches diameter, is 4 feet 3 inches, the circumference or length required.

Required, the circumference of an oval ring, whose inside axis are 1 foot 6 inches, and 1 foot 1½ inch, the breadth of iron being 2½ inches.

	1 foot 6 inches.		
	1 ,, 1½ ,,		
2	2 ,, 7½ ,,		
	1 ,, 3¾ ,,		
	2½ ,,		thickness of iron.
	1 ,, 6¼ ,,		diameter required.

In table 26, page 132, opposite 1 foot 6¼ inches diameter, is 4 feet 9¼ inches, the circumference or length required.

NOTE.—In the tables of lengths for hoops and rings, whether plain or angled, no allowance is made for welding or shutting.

TABLE XXVI.

DIAMETERS AND CIRCUMFERENCES.

DIAMETER	CIRCUMFERENCE	DIAMETER	CIRCUMFERENCE	DIAMETER	CIRCUMFERENCE.	DIAMETER	CIRCUMFERENCE
IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1/32	·0981	4/16	·7854	8/16	1·5708	12/16	2·3562
1/16	·1963	5/16	·9817	9/16	1·7671	13/16	2·5525
2/16	·3927	6/16	1·1781	10/16	1·9635	14/16	2·7489
3/16	·5890	7/16	1·3744	11/16	2·1593	15/16	2·9452

DIAMETERS AND CIRCUMFERENCES.

DIAMETER		CIRCUMFERENCE		DIAMETER		CIRCUMFERENCE		DIAMETER		CIRCUMFERENCE.		DIAMETER		CIRCUMFERENCE	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
0	1	0	3 1/8	0	5	1	3 5/8	0	9	2	4 1/4	1	1	3	4 7/8
0	1 1/8	0	3 1/2	0	5 1/8	1	4	0	9 1/8	2	4 5/8	1	1 1/8	3	5 1/4
0	1 1/4	0	3 7/8	0	5 1/4	1	4 1/2	0	9 1/4	2	5	1	1 1/4	3	5 5/8
0	1 3/8	0	4 1/4	0	5 3/8	1	4 7/8	0	9 3/8	2	5 1/8	1	1 3/8	3	6
0	1 1/2	0	4 5/8	0	5 1/2	1	5 1/4	0	9 1/2	2	5 7/8	1	1 1/2	3	6 3/8
0	1 5/8	0	5	0	5 5/8	1	5 5/8	0	9 5/8	2	6 1/4	1	1 5/8	3	6 3/4
0	1 3/4	0	5 3/8	0	5 3/4	1	6	0	9 3/4	2	6 5/8	1	1 3/4	3	7 1/8
0	1 7/8	0	5 7/8	0	5 7/8	1	6 1/2	0	9 7/8	2	7	1	1 7/8	3	7 5/8
0	2	0	6 1/4	0	6	1	6 7/8	0	10	2	7 3/8	1	2	3	8
0	2 1/8	0	6 5/8	0	6 1/8	1	7 1/4	0	10 1/8	2	7 3/4	1	2 1/8	3	8 3/8
0	2 1/4	0	7	0	6 1/4	1	7 5/8	0	10 1/4	2	8 1/4	1	2 1/4	3	8 3/4
0	2 3/8	0	7 1/2	0	6 3/8	1	8	0	10 3/8	2	8 5/8	1	2 3/8	3	9 1/8
0	2 1/2	0	7 7/8	0	6 1/2	1	8 3/8	0	10 1/2	2	9	1	2 1/2	3	9 1/2
0	2 5/8	0	8 1/4	0	6 5/8	1	8 3/4	0	10 5/8	2	9 3/8	1	2 5/8	3	9 7/8
0	2 3/4	0	8 5/8	0	6 3/4	1	9 1/8	0	10 3/4	2	9 1/4	1	2 3/4	3	10 3/8
0	2 7/8	0	9	0	6 7/8	1	9 1/2	0	10 7/8	2	10 1/8	1	2 7/8	3	10 3/4
0	3	0	9 3/8	0	7	1	10	0	11	2	10 1/2	1	3	3	11 1/8
0	3 1/8	0	9 3/4	0	7 1/8	1	10 3/8	0	11 1/8	2	10 7/8	1	3 1/8	3	11 1/2
0	3 1/4	0	10 1/8	0	7 1/4	1	10 3/4	0	11 1/2	2	11 3/8	1	3 1/4	3	11 7/8
0	3 3/8	0	10 1/2	0	7 3/8	1	11 1/8	0	11 3/8	2	11 3/4	1	3 3/8	4	0 1/4
0	3 1/2	0	11	0	7 1/2	1	11 1/2	0	11 1/2	3	0 1/8	1	3 1/2	4	0 5/8
0	3 5/8	0	11 3/8	0	7 5/8	1	11 7/8	0	11 5/8	3	0 1/2	1	3 5/8	4	1
0	3 3/4	0	11 3/4	0	7 3/4	2	0 3/8	0	11 3/4	3	0 7/8	1	3 3/4	4	1 3/8
0	3 7/8	1	0 1/8	0	7 7/8	2	0 1/4	0	11 7/8	3	1 1/4	1	3 7/8	4	1 7/8
0	4	1	0 1/2	0	8	2	1 1/8	1	0	3	1 5/8	1	4	4	2 1/4
0	4 1/8	1	0 7/8	0	8 1/8	2	1 1/2	1	0 1/8	3	2	1	4 1/8	4	2 5/8
0	4 1/4	1	1 3/8	0	8 1/4	2	1 7/8	1	0 1/4	3	2 1/2	1	4 1/4	4	3
0	4 3/8	1	1 3/4	0	8 3/8	2	2 3/8	1	0 3/8	3	2 7/8	1	4 3/8	4	3 3/8
0	4 1/2	1	2 1/8	0	8 1/2	2	2 3/4	1	0 1/2	3	3 1/4	1	4 1/2	4	3 1/4
0	4 5/8	1	2 1/2	0	8 5/8	2	3 1/8	1	0 5/8	3	3 5/8	1	4 5/8	4	4 1/8
0	4 3/4	1	2 7/8	0	8 3/4	2	3 1/2	1	0 3/4	3	4	1	4 3/4	4	4 1/2
0	4 7/8	1	3 1/4	0	8 7/8	2	3 7/8	1	0 7/8	3	4 3/8	1	4 7/8	4	5

DIAMETERS AND CIRCUMFERENCES.

DIAMETER		CIRCUMFERENCE		DIAMETER		CIRCUMFERENCE		DIAMETER		CIRCUMFERENCE.		DIAMETER		CIRCUMFERENCE	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
1	5	4	5 3/8	1	9	5	5 7/8	2	1	6	6 1/2	2	5	7	7
1	5 1/8	4	5 3/4	1	9 1/8	5	6 3/8	2	1 1/8	6	6 7/8	2	5 1/8	7	7 1/8
1	5 1/4	4	6 1/8	1	9 1/4	5	6 3/4	2	1 1/4	6	7 1/4	2	5 1/4	7	7 1/8
1	5 3/8	4	6 1/2	1	9 3/8	5	7 1/8	2	1 3/8	6	7 5/8	2	5 3/8	7	8 1/4
1	5 1/2	4	7	1	9 1/2	5	7 1/4	2	1 1/2	6	8 1/8	2	5 1/2	7	8 1/8
1	5 5/8	4	7 3/8	1	9 5/8	5	8	2	1 5/8	6	8 1/2	2	5 5/8	7	9
1	5 3/4	4	7 3/4	1	9 3/4	5	8 3/8	2	1 3/4	6	8 7/8	2	5 3/4	7	9 3/8
1	5 7/8	4	8 1/8	1	9 7/8	5	8 3/4	2	1 7/8	6	9 1/4	2	5 7/8	7	9 3/4
1	6	4	8 1/2	1	10	5	9 1/8	2	2	6	9 5/8	2	6	7	10 1/4
1	6 1/8	4	8 7/8	1	10 1/8	5	9 1/2	2	2 1/8	6	10	2	6 1/8	7	10 5/8
1	6 1/4	4	9 1/4	1	10 1/4	5	9 7/8	2	2 1/4	6	10 1/2	2	6 1/4	7	11
1	6 3/8	4	9 5/8	1	10 3/8	5	10 1/4	2	2 3/8	6	10 7/8	2	6 3/8	7	11 3/8
1	6 1/2	4	10 1/8	1	10 1/2	5	10 5/8	2	2 1/2	6	11 1/4	2	6 1/2	7	11 3/4
1	6 5/8	4	10 1/2	1	10 5/8	5	11	2	2 5/8	6	11 5/8	2	6 5/8	8	0 1/8
1	6 3/4	4	10 7/8	1	10 3/4	5	11 1/2	2	2 3/4	7	0	2	6 3/4	8	0 1/2
1	6 7/8	4	11 1/4	1	10 7/8	5	11 7/8	2	2 7/8	7	0 3/8	2	6 7/8	8	1
1	7	4	11 5/8	1	11	6	0 1/4	2	3	7	0 3/4	2	7	8	1 3/8
1	7 1/8	5	0	1	11 1/8	6	0 5/8	2	3 1/8	7	1 1/8	2	7 1/8	8	1 3/4
1	7 1/4	5	0 3/8	1	11 1/4	6	1	2	3 1/4	7	1 1/2	2	7 1/4	8	2 1/8
1	7 3/8	5	0 7/8	1	11 3/8	6	1 3/8	2	3 3/8	7	2	2	7 3/8	8	2 1/2
1	7 1/2	5	1 1/4	1	11 1/2	6	1 3/4	2	3 1/2	7	2 3/8	2	7 1/2	8	2 7/8
1	7 5/8	5	1 5/8	1	11 5/8	6	2 1/4	2	3 5/8	7	2 3/4	2	7 5/8	8	3 3/8
1	7 3/4	5	2	1	11 3/4	6	2 5/8	2	3 3/4	7	3 1/8	2	7 3/4	8	3 3/4
1	7 7/8	5	2 3/8	1	11 7/8	6	3	2	3 7/8	7	3 1/2	2	7 7/8	8	4 1/8
1	8	5	2 3/4	2	0	6	3 3/8	2	4	7	3 7/8	2	8	8	4 1/2
1	8 1/8	5	3 1/8	2	0 1/8	6	3 3/4	2	4 1/8	7	4 3/8	2	8 1/8	8	4 7/8
1	8 1/4	5	3 5/8	2	0 1/4	6	4 1/8	2	4 1/4	7	4 3/4	2	8 1/4	8	5 1/4
1	8 3/8	5	4	2	0 3/8	6	4 1/2	2	4 3/8	7	5 1/8	2	8 3/8	8	5 5/8
1	8 1/2	5	4 3/8	2	0 1/2	6	4 7/8	2	4 1/2	7	5 1/2	2	8 1/2	8	6
1	8 5/8	5	4 3/4	2	0 5/8	6	5 3/8	2	4 5/8	7	5 7/8	2	8 5/8	8	6 1/2
1	8 3/4	5	5 1/8	2	0 3/4	6	5 3/4	2	4 3/4	7	6 1/4	2	8 3/4	8	6 7/8
1	8 7/8	5	5 1/2	2	0 7/8	6	6 1/8	2	4 7/8	7	6 5/8	2	8 7/8	8	7 1/4

DIAMETERS AND CIRCUMFERENCES.

DIAMETER		CIRCUMFERENCE		DIAMETER		CIRCUMFERENCE		DIAMETER		CIRCUMFERENCE.		DIAMETER		CIRCUMFERENCE	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN.
2	9	8	$7\frac{5}{8}$	3	1	9	$8\frac{1}{4}$	3	5	10	$8\frac{3}{4}$	3	9	11	$9\frac{3}{8}$
2	$9\frac{1}{8}$	8	8	3	$1\frac{1}{8}$	9	$8\frac{5}{8}$	3	$5\frac{1}{8}$	10	$9\frac{1}{8}$	3	$9\frac{1}{8}$	11	$9\frac{3}{4}$
2	$9\frac{1}{4}$	8	$8\frac{3}{8}$	3	$1\frac{1}{4}$	9	9	3	$5\frac{1}{4}$	10	$9\frac{1}{2}$	3	$9\frac{1}{4}$	11	$10\frac{1}{8}$
2	$9\frac{3}{8}$	8	$8\frac{7}{8}$	3	$1\frac{3}{8}$	9	$9\frac{3}{8}$	3	$5\frac{3}{8}$	10	$9\frac{7}{8}$	3	$9\frac{3}{8}$	11	$10\frac{1}{4}$
2	$9\frac{1}{2}$	8	$9\frac{1}{4}$	3	$1\frac{1}{2}$	9	$9\frac{3}{4}$	3	$5\frac{1}{2}$	10	$10\frac{3}{8}$	3	$9\frac{1}{2}$	11	$10\frac{7}{8}$
2	$9\frac{5}{8}$	8	$9\frac{5}{8}$	3	$1\frac{5}{8}$	9	$10\frac{1}{8}$	3	$5\frac{5}{8}$	10	$10\frac{3}{4}$	3	$9\frac{5}{8}$	11	$11\frac{1}{4}$
2	$9\frac{3}{4}$	8	10	3	$1\frac{3}{4}$	9	$10\frac{1}{4}$	3	$5\frac{3}{4}$	10	$11\frac{1}{8}$	3	$9\frac{3}{4}$	11	$11\frac{5}{8}$
2	$9\frac{7}{8}$	8	$10\frac{3}{8}$	3	$1\frac{7}{8}$	9	$10\frac{7}{8}$	3	$5\frac{7}{8}$	10	$11\frac{1}{2}$	3	$9\frac{7}{8}$	12	$0\frac{1}{8}$
2	10	8	$10\frac{3}{4}$	3	2	9	$11\frac{3}{8}$	3	6	10	$11\frac{7}{8}$	3	10	12	$0\frac{1}{2}$
2	$10\frac{1}{8}$	8	$11\frac{1}{8}$	3	$2\frac{1}{8}$	9	$11\frac{3}{4}$	3	$6\frac{1}{8}$	11	$0\frac{3}{8}$	3	$10\frac{1}{8}$	12	$0\frac{7}{8}$
2	$10\frac{1}{4}$	8	$11\frac{1}{2}$	3	$2\frac{1}{4}$	10	$0\frac{1}{8}$	3	$6\frac{1}{4}$	11	$0\frac{3}{4}$	3	$10\frac{1}{4}$	12	$1\frac{1}{4}$
2	$10\frac{3}{8}$	9	0	3	$2\frac{3}{8}$	10	$0\frac{1}{2}$	3	$6\frac{3}{8}$	11	$1\frac{1}{8}$	3	$10\frac{3}{8}$	12	$1\frac{5}{8}$
2	$10\frac{1}{2}$	9	$0\frac{3}{8}$	3	$2\frac{1}{2}$	10	$0\frac{7}{8}$	3	$6\frac{1}{2}$	11	$1\frac{1}{2}$	3	$10\frac{1}{2}$	12	2
2	$10\frac{5}{8}$	9	$0\frac{3}{4}$	3	$2\frac{5}{8}$	10	$1\frac{3}{8}$	3	$6\frac{5}{8}$	11	$1\frac{7}{8}$	3	$10\frac{5}{8}$	12	$2\frac{3}{8}$
2	$10\frac{3}{4}$	9	$1\frac{1}{8}$	3	$2\frac{3}{4}$	10	$1\frac{3}{4}$	3	$6\frac{3}{4}$	11	$2\frac{1}{4}$	3	$10\frac{3}{4}$	12	$2\frac{7}{8}$
2	$10\frac{7}{8}$	9	$1\frac{1}{2}$	3	$2\frac{7}{8}$	10	$2\frac{1}{8}$	3	$6\frac{7}{8}$	11	$2\frac{5}{8}$	3	$10\frac{7}{8}$	12	$3\frac{1}{4}$
2	11	9	$1\frac{7}{8}$	3	3	10	$2\frac{1}{2}$	3	7	11	3	3	11	12	$3\frac{5}{8}$
2	$11\frac{1}{8}$	9	$2\frac{3}{8}$	3	$3\frac{1}{8}$	10	$2\frac{7}{8}$	3	$7\frac{1}{8}$	11	$3\frac{1}{2}$	3	$11\frac{1}{8}$	12	4
2	$11\frac{1}{4}$	9	$2\frac{3}{4}$	3	$3\frac{1}{4}$	10	$3\frac{1}{4}$	3	$7\frac{1}{4}$	11	$3\frac{7}{8}$	3	$11\frac{1}{4}$	12	$4\frac{3}{8}$
2	$11\frac{3}{8}$	9	$3\frac{1}{8}$	3	$3\frac{3}{8}$	10	$3\frac{5}{8}$	3	$7\frac{3}{8}$	11	$4\frac{1}{4}$	3	$11\frac{3}{8}$	12	$4\frac{3}{4}$
2	$11\frac{1}{2}$	9	$3\frac{1}{2}$	3	$3\frac{1}{2}$	10	4	3	$7\frac{1}{2}$	11	$4\frac{5}{8}$	3	$11\frac{1}{2}$	12	$5\frac{1}{4}$
2	$11\frac{5}{8}$	9	$3\frac{7}{8}$	3	$3\frac{5}{8}$	10	$4\frac{1}{8}$	3	$7\frac{5}{8}$	11	5	3	$11\frac{5}{8}$	12	$5\frac{5}{8}$
2	$11\frac{3}{4}$	9	$4\frac{1}{4}$	3	$3\frac{3}{4}$	10	$4\frac{7}{8}$	3	$7\frac{3}{4}$	11	$5\frac{3}{8}$	3	$11\frac{3}{4}$	12	6
2	$11\frac{7}{8}$	9	$4\frac{5}{8}$	3	$3\frac{7}{8}$	10	$5\frac{1}{4}$	3	$7\frac{7}{8}$	11	$5\frac{3}{4}$	3	$11\frac{7}{8}$	12	$6\frac{3}{8}$
3	0	9	5	3	4	10	$5\frac{5}{8}$	3	8	11	$6\frac{1}{4}$	4	0	12	$6\frac{3}{4}$
3	$0\frac{1}{8}$	9	$5\frac{1}{8}$	3	$4\frac{1}{8}$	10	6	3	$8\frac{1}{8}$	11	$6\frac{3}{8}$	4	$0\frac{1}{8}$	12	$7\frac{1}{8}$
3	$0\frac{1}{4}$	9	$5\frac{7}{8}$	3	$4\frac{1}{4}$	10	$6\frac{3}{8}$	3	$8\frac{1}{4}$	11	7	4	$0\frac{1}{4}$	12	$7\frac{1}{4}$
3	$0\frac{3}{8}$	9	$6\frac{1}{4}$	3	$4\frac{3}{8}$	10	$6\frac{7}{8}$	3	$8\frac{3}{8}$	11	$7\frac{3}{8}$	4	$0\frac{3}{8}$	12	$7\frac{7}{8}$
3	$0\frac{1}{2}$	9	$6\frac{5}{8}$	3	$4\frac{1}{2}$	10	$7\frac{1}{4}$	3	$8\frac{1}{2}$	11	$7\frac{3}{4}$	4	$0\frac{1}{2}$	12	$8\frac{3}{8}$
3	$0\frac{5}{8}$	9	7	3	$4\frac{5}{8}$	10	$7\frac{5}{8}$	3	$8\frac{5}{8}$	11	$8\frac{1}{8}$	4	$0\frac{5}{8}$	12	$8\frac{3}{4}$
3	$0\frac{3}{4}$	9	$7\frac{3}{8}$	3	$4\frac{3}{4}$	10	8	3	$8\frac{3}{4}$	11	$8\frac{1}{2}$	4	$0\frac{3}{4}$	12	$9\frac{1}{8}$
3	$0\frac{7}{8}$	9	$7\frac{7}{8}$	3	$4\frac{7}{8}$	10	$8\frac{3}{8}$	3	$8\frac{7}{8}$	11	$8\frac{7}{8}$	4	$0\frac{7}{8}$	12	$9\frac{1}{2}$

DIAMETERS AND CIRCUMFERENCES.

DIAMETER		CIRCUMFERENCE		DIAMETER		CIRCUMFERENCE		DIAMETER		CIRCUMFERENCE.		DIAMETER		CIRCUMFERENCE	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
4	1	12	9 7/8	4	5	13	10 1/2	4	9	14	11	5	1	15	11 5/8
4	1 1/8	12	10 3/8	4	5 1/8	13	10 7/8	4	9 1/8	14	11 1/2	5	1 1/8	16	0
4	1 1/4	12	10 3/4	4	5 1/4	13	11 1/4	4	9 1/4	14	11 7/8	5	1 1/4	16	0 3/8
4	1 3/8	12	11 1/8	4	5 3/8	13	11 5/8	4	9 3/8	15	0 1/4	5	1 3/8	16	0 3/4
4	1 1/2	12	11 1/2	4	5 1/2	14	0	4	9 1/2	15	0 5/8	5	1 1/2	16	1 1/8
4	1 5/8	12	11 7/8	4	5 5/8	14	0 3/8	4	9 5/8	15	1	5	1 5/8	16	1 1/8
4	1 3/4	13	0 1/4	4	5 3/4	14	0 7/8	4	9 3/4	15	1 3/8	5	1 3/4	16	2
4	1 7/8	13	0 5/8	4	5 7/8	14	1 1/4	4	9 7/8	15	1 7/8	5	1 7/8	16	2 3/8
4	2	13	1	4	6	14	1 5/8	4	10	15	2 1/4	5	2	16	2 3/4
4	2 1/8	13	1 1/2	4	6 1/8	14	2	4	10 1/8	15	2 5/8	5	2 1/8	16	3 1/8
4	2 1/4	13	1 7/8	4	6 1/4	14	2 3/8	4	10 1/4	15	3	5	2 1/4	16	3 1/2
4	2 3/8	13	2 1/4	4	6 3/8	14	2 3/4	4	10 3/8	15	3 3/8	5	2 3/8	16	3 7/8
4	2 1/2	13	2 5/8	4	6 1/2	14	3 1/8	4	10 1/2	15	3 3/4	5	2 1/2	16	4 3/8
4	2 5/8	13	3	4	6 5/8	14	3 1/2	4	10 5/8	15	4 1/8	5	2 5/8	16	4 3/4
4	2 3/4	13	3 3/8	4	6 3/4	14	4	4	10 3/4	15	4 1/2	5	2 3/4	16	5 1/8
4	2 7/8	13	3 3/4	4	6 7/8	14	4 3/8	4	10 7/8	15	4 7/8	5	2 7/8	16	5 1/2
4	3	13	4 1/4	4	7	14	4 3/4	4	11	15	5 3/8	5	3	16	5 7/8
4	3 1/8	13	4 5/8	4	7 1/8	14	5 1/8	4	11 1/8	15	5 3/4	5	3 1/8	16	6 1/4
4	3 1/4	13	5	4	7 1/4	14	5 1/2	4	11 1/4	15	6 1/8	5	3 1/4	16	6 5/8
4	3 3/8	13	5 3/8	4	7 3/8	14	5 7/8	4	11 3/8	15	6 1/2	5	3 3/8	16	7
4	3 1/2	13	5 3/4	4	7 1/2	14	6 3/8	4	11 1/2	15	6 7/8	5	3 1/2	16	7 1/2
4	3 5/8	13	6 1/8	4	7 5/8	14	6 3/4	4	11 5/8	15	7 1/4	5	3 5/8	16	7 7/8
4	3 3/4	13	6 1/2	4	7 3/4	14	7 1/8	4	11 3/4	15	7 3/4	5	3 3/4	16	8 1/4
4	3 7/8	13	7	4	7 7/8	14	7 1/2	4	11 7/8	15	8 1/8	5	3 7/8	16	8 5/8
4	4	13	7 3/8	4	8	14	7 7/8	5	0	15	8 1/2	5	4	16	9
4	4 1/8	13	7 3/4	4	8 1/8	14	8 1/4	5	0 1/8	15	8 7/8	5	4 1/8	16	9 3/8
4	4 1/4	13	8 1/8	4	8 1/4	14	8 3/4	5	0 1/4	15	9 1/4	5	4 1/4	16	9 7/8
4	4 3/8	13	8 1/2	4	8 3/8	14	9 1/8	5	0 3/8	15	9 5/8	5	4 3/8	16	10 1/4
4	4 1/2	13	8 7/8	4	8 1/2	14	9 1/2	5	0 1/2	15	10	5	4 1/2	16	10 5/8
4	4 5/8	13	9 1/4	4	8 5/8	14	9 7/8	5	0 5/8	15	10 3/8	5	4 5/8	16	11
4	4 3/4	13	9 5/8	4	8 3/4	14	10 1/4	5	0 3/4	15	10 7/8	5	4 3/4	16	11 3/8
4	4 7/8	13	10 1/8	4	8 7/8	14	10 5/8	5	0 7/8	15	11 1/4	5	4 7/8	16	11 3/4

DIAMETERS AND CIRCUMFERENCES.

DIAMETER		CIRCUM-FERENCE		DIAMETER		CIRCUM-FERENCE		DIAMETER		CIRCUM-FERENCE.		DIAMETER		CIRCUM-FERENCE
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT. IN.
5	5	17	0 1/8	5	9	18	0 3/4	6	1	19	1 3/8	6	5	20 1 7/8
5	5 1/8	17	0 3/8	5	9 1/8	18	1 1/8	6	1 1/8	19	1 3/4	6	5 1/8	20 2 1/4
5	5 1/4	17	1	5	9 1/4	18	1 1/2	6	1 1/4	19	2 1/8	6	5 1/4	20 2 5/8
5	5 3/8	17	1 1/8	5	9 3/8	18	1 7/8	6	1 3/8	19	2 1/2	6	5 3/8	20 3
5	5 1/2	17	1 1/4	5	9 1/2	18	2 3/8	6	1 1/2	19	2 7/8	6	5 1/2	20 3 1/2
5	5 5/8	17	2 1/8	5	9 5/8	18	2 3/4	6	1 5/8	19	3 1/4	6	5 5/8	20 3 7/8
5	5 3/4	17	2 1/2	5	9 3/4	18	3 1/8	6	1 3/4	19	3 5/8	6	5 3/4	20 4 1/4
5	5 7/8	17	2 7/8	5	9 7/8	18	3 1/2	6	1 7/8	19	4	6	5 7/8	20 4 5/8
5	6	17	3 3/8	5	10	18	3 7/8	6	2	19	4 1/2	6	6	20 5
5	6 1/8	17	3 3/4	5	10 1/8	18	4 1/4	6	2 1/8	19	4 7/8	6	6 1/8	20 5 3/8
5	6 1/4	17	4 1/8	5	10 1/4	18	4 5/8	6	2 1/4	19	5 1/4	6	6 1/4	20 5 7/8
5	6 3/8	17	4 1/2	5	10 3/8	18	5	6	2 3/8	19	5 5/8	6	6 3/8	20 6 1/4
5	6 1/2	17	4 7/8	5	10 1/2	18	5 1/3	6	2 1/2	19	6	6	6 1/2	20 6 5/8
5	6 5/8	17	5 1/4	5	10 5/8	18	5 7/8	6	2 5/8	19	6 3/8	6	6 5/8	20 7
5	6 3/4	17	5 5/8	5	10 3/4	18	6 1/4	6	2 3/4	19	6 7/8	6	6 3/4	20 7 3/8
5	6 7/8	17	6	5	10 7/8	18	6 5/8	6	2 7/8	19	7 1/4	6	6 7/8	20 7 3/4
5	7	17	6 1/2	5	11	18	7	6	3	19	7 5/8	6	7	20 8 1/8
5	7 1/8	17	6 5/8	5	11 1/8	18	7 3/8	6	3 1/8	19	8	6	7 1/8	20 8 1/2
5	7 1/4	17	7 1/4	5	11 1/4	18	7 3/4	6	3 1/4	19	8 3/8	6	7 1/4	20 9
5	7 3/8	17	7 5/8	5	11 3/8	18	8 1/4	6	3 3/8	19	8 3/4	6	7 3/8	20 9 3/8
5	7 1/2	17	8	5	11 1/2	18	8 5/8	6	3 1/2	19	9 1/8	6	7 1/2	20 9 3/4
5	7 5/8	17	8 3/8	5	11 5/8	18	9	6	3 5/8	19	9 5/8	6	7 5/8	20 10 1/8
5	7 3/4	17	8 7/8	5	11 3/4	18	9 3/8	6	3 3/4	19	10	6	7 3/4	20 10 1/4
5	7 7/8	17	9 1/4	5	11 7/8	18	9 3/4	6	3 7/8	19	10 3/8	6	7 7/8	20 10 7/8
5	8	17	9 5/8	6	0	18	10 1/8	6	4	19	10 3/4	6	8	20 11 3/8
5	8 1/8	17	10	6	0 1/8	18	10 1/2	6	4 1/8	19	11 1/8	6	8 1/8	20 11 3/4
5	8 1/4	17	10 3/8	6	0 1/4	18	11	6	4 1/4	19	11 1/2	6	8 1/4	21 0 1/8
5	8 3/8	17	10 3/4	6	0 3/8	18	11 3/8	6	4 3/8	19	11 7/8	6	8 3/8	21 0 1/2
5	8 1/2	17	11 1/8	6	0 1/2	18	11 3/4	6	4 1/2	20	0 3/8	6	8 1/2	21 0 7/8
5	8 5/8	17	11 1/2	6	0 5/8	19	0 1/8	6	4 5/8	20	0 3/4	6	8 5/8	21 1 1/4
5	8 3/4	18	0	6	0 3/4	19	0 1/2	6	4 3/4	20	1 1/8	6	8 3/4	21 1 5/8
5	8 7/8	18	0 3/8	6	0 7/8	19	0 7/8	6	4 7/8	20	1 1/2	6	8 7/8	21 2

DIAMETERS AND CIRCUMFERENCES.

DIAMETER		CIRCUMFERENCE		DIAMETER		CIRCUMFERENCE		DIAMETER		CIRCUMFERENCE		DIAMETER		CIRCUMFERENCE	
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.	IN
6	9	21	2½	7	1	22	8	7	5	23	3⅝	7	9	24	4½
6	9⅛	21	2⅞	7	1⅛	22	8⅜	7	5⅛	23	4	7	9⅛	24	4⅝
6	9¼	21	3¼	7	1¼	22	8⅞	7	5¼	23	4⅜	7	9¼	24	4¾
6	9⅜	21	3⅝	7	1⅜	22	4½	7	5⅜	23	4⅝	7	9⅜	24	5⅛
6	9½	21	4	7	1½	22	4⅝	7	5½	23	5⅛	7	9½	24	5½
6	9⅝	21	4⅜	7	1⅝	22	5	7	5⅝	23	5½	7	9⅝	24	6⅛
6	9¾	21	4¾	7	1¾	22	5⅜	7	5¾	23	6	7	9¾	24	6¼
6	9⅞	21	5⅛	7	1⅞	22	5¾	7	5⅞	23	6⅜	7	9⅞	24	6⅝
6	10	21	5½	7	2	22	6⅛	7	6	23	6¾	7	10	24	7⅛
6	10⅛	21	6	7	2⅛	22	6½	7	6⅛	23	7⅛	7	10⅛	24	7⅝
6	10¼	21	6⅜	7	2¼	22	7	7	6¼	23	7½	7	10¼	24	8
6	10⅜	21	6¾	7	2⅜	22	7⅜	7	6⅜	23	7⅞	7	10⅜	24	8½
6	10½	21	7⅛	7	2½	22	7¾	7	6½	23	8¼	7	10½	24	8⅞
6	10⅝	21	7⅝	7	2⅝	22	8⅛	7	6⅝	23	8⅜	7	10⅝	24	9¼
6	10¾	21	8	7	2¾	22	8½	7	6¾	23	9⅛	7	10¾	24	9⅝
6	10⅞	21	8⅜	7	2⅞	22	8⅞	7	6⅞	23	9½	7	10⅞	24	10
6	11	21	8¾	7	3	22	9¼	7	7	23	9⅞	7	11	24	10½
6	11⅛	21	9⅛	7	3⅛	22	9¾	7	7⅛	23	10¼	7	11⅛	24	10⅞
6	11¼	21	9½	7	3¼	22	10⅛	7	7¼	23	10⅝	7	11¼	24	11¼
6	11⅜	21	9⅞	7	3⅜	22	10½	7	7⅜	23	11	7	11⅜	24	11⅝
6	11½	21	10⅜	7	3½	22	10⅞	7	7½	23	11½	7	11½	25	0
6	11⅝	21	10¾	7	3⅝	22	11¼	7	7⅝	23	11⅞	7	11⅝	25	0⅜
6	11¾	21	11⅛	7	3¾	22	11⅝	7	7¾	24	0¼	7	11¾	25	0¾
6	11⅞	21	11½	7	3⅞	23	0	7	7⅞	24	0⅝	7	11⅞	25	1¼
7	0	21	11⅞	7	4	23	0½	7	8	24	1	8	0	25	1⅝
7	0⅛	22	0¼	7	4⅛	23	0⅞	7	8⅛	24	1⅜	8	0⅛	25	2
7	0¼	22	0⅝	7	4¼	23	1¼	7	8¼	24	1¾	8	0¼	25	2⅜
7	0⅜	22	1	7	4⅜	23	1⅝	7	8⅜	24	2¼	8	0⅜	25	2¾
7	0½	22	1½	7	4½	23	2	7	8½	24	2⅝	8	0½	25	3⅛
7	0⅝	22	1⅞	7	4⅝	23	2⅜	7	8⅝	24	3	8	0⅝	25	3½
7	0¾	22	2¼	7	4¾	23	2¾	7	8¾	24	3⅜	8	0¾	25	3⅞
7	0⅞	22	2⅝	7	4⅞	23	3¼	7	8⅞	24	3¾	8	0⅞	25	4¼

DIAMETERS AND CIRCUMFERENCES.

DIAMETER		CIRCUM-FERENCE		DIAMETER		CIRCUM-FERENCE		DIAMETER		CIRCUM-FERENCE.		DIAMETER		CIRCUM-FERENCE
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT. IN.
8	1	25	4¼	8	5	26	5¼	8	9	27	5⅞	9	1	28 6⅜
8	1⅛	25	5⅛	8	5⅛	26	5⅝	8	9⅛	27	6¼	9	1⅛	28 6⅞
8	1¼	25	5¼	8	5¼	26	6	8	9¼	27	6⅝	9	1¼	28 7¼
8	1⅜	25	5⅞	8	5⅜	26	6⅛	8	9⅜	27	7	9	1⅜	28 7⅝
8	1½	25	6¼	8	5½	26	6⅞	8	9½	27	7⅜	9	1½	28 8
8	1⅝	25	6⅝	8	5⅝	26	7¼	8	9⅝	27	7⅞	9	1⅝	28 8⅜
8	1¾	25	7	8	5¾	26	7⅝	8	9¾	27	8¼	9	1¾	28 8⅞
8	1⅞	25	7⅛	8	5⅞	26	8	8	9⅞	27	8⅝	9	1⅞	28 9⅛
8	2	25	7⅞	8	6	26	8⅜	8	10	27	9	9	2	28 9⅝
8	2⅛	25	8¼	8	6⅛	26	8⅞	8	10⅛	27	9⅜	9	2⅛	28 10
8	2¼	25	8⅝	8	6¼	26	9¼	8	10¼	27	9¾	9	2¼	28 10⅜
8	2⅜	25	9	8	6⅜	26	9⅝	8	10⅜	27	10⅛	9	2⅜	28 10¾
8	2½	25	9½	8	6½	26	10	8	10½	27	10⅝	9	2½	28 11⅛
8	2⅝	25	9⅞	8	6⅝	26	10⅜	8	10⅝	27	11	9	2⅝	28 11½
8	2¾	25	10¼	8	6¾	26	10¾	8	10¾	27	11⅜	9	2¾	28 11⅞
8	2⅞	25	10⅝	8	6⅞	26	11⅛	8	10⅞	27	11¾	9	2⅞	29 0⅜
8	3	25	11	8	7	26	11½	8	11	28	0⅛	9	3	29 0¾
8	3⅛	25	11⅜	8	7⅛	27	0	8	11⅛	28	0½	9	3⅛	29 1⅛
8	3¼	25	11¾	8	7¼	27	0⅜	8	11¼	28	0⅞	9	3¼	29 1½
8	3⅜	26	0⅛	8	7⅜	27	0¾	8	11⅜	28	1⅜	9	3⅜	29 1⅞
8	3½	26	0⅝	8	7½	27	1⅛	8	11½	28	1¾	9	3½	29 2¼
8	3⅝	26	1	8	7⅝	27	1½	8	11⅝	28	2⅛	9	3⅝	29 2⅝
8	3¾	26	1⅜	8	7¾	27	1⅞	8	11¾	28	2½	9	3¾	29 3
8	3⅞	26	1¾	8	7⅞	27	2⅜	8	11⅞	28	2⅞	9	3⅞	29 3½
8	4	26	2⅛	8	8	27	2¾	9	0	28	3¼	9	4	29 3⅞
8	4⅛	26	2½	8	8⅛	27	3⅛	9	0⅛	28	3⅝	9	4⅛	29 4¼
8	4¼	26	2⅞	8	8¼	27	3½	9	0¼	28	4	9	4¼	29 4⅝
8	4⅜	26	3⅜	8	8⅜	27	3⅞	9	0⅜	28	4½	9	4⅜	29 5
8	4½	26	3¾	8	8½	27	4¼	9	0½	28	4⅞	9	4½	29 5⅜
8	4⅝	26	4⅛	8	8⅝	27	4⅝	9	0⅝	28	5¼	9	4⅝	29 5¾
8	4¾	26	4½	8	8¾	27	5	9	0¾	28	5⅝	9	4¾	29 6¼
8	4⅞	26	4⅞	8	8⅞	27	5¼	9	0⅞	28	6	9	4⅞	29 6⅝

DIAMETERS AND CIRCUMFERENCES.

DIAMETER		CIRCUM-FERENCE		DIAMETER		CIRCUM-FERENCE		DIAMETER		CIRCUM-FERENCE.		DIAMETER		CIRCU FEREN
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.
9	5	29	7	9	9	30	7½	10	1	31	8⅛	10	5	32
9	5⅛	29	7⅜	9	9⅛	30	7⅝	10	1⅛	31	8½	10	5⅛	32
9	5¼	29	7¾	9	9¼	30	8⅜	10	1¼	31	8⅞	10	5¼	32
9	5⅜	29	8⅛	9	9⅜	30	8¾	10	1⅜	31	9¼	10	5⅜	32
9	5½	29	8½	9	9½	30	9⅛	10	1½	31	9⅜	10	5½	32 1
9	5⅝	29	9	9	9⅝	30	9½	10	1⅝	31	10	10	5⅝	32 1
9	5¾	29	9⅜	9	9¾	30	9⅞	10	1¾	31	10½	10	5¾	32 1
9	5⅞	29	9¾	9	9⅞	30	10¼	10	1⅞	31	10⅞	10	5⅞	32 1
9	6	29	10⅛	9	10	30	10⅜	10	2	31	11¼	10	6	32 1
9	6⅛	29	10½	9	10⅛	30	11⅛	10	2⅛	31	11⅜	10	6⅛	33
9	6¼	29	10⅞	9	10¼	30	11½	10	2¼	32	0	10	6¼	33
9	6⅜	29	11¼	9	10⅜	30	11⅞	10	2⅜	32	0½	10	6⅜	33
9	6½	29	11⅝	9	10½	31	0¼	10	2½	22	0⅞	10	6½	33
9	6⅝	30	0	9	10⅝	31	0⅝	10	2⅝	32	1¼	10	6⅝	33
9	6¾	30	0½	9	10¾	31	1	10	2¾	32	1⅝	10	6¾	33
9	6⅞	30	0⅞	9	10⅞	31	1⅜	10	2⅞	32	2	10	6⅞	33
9	7	30	1¼	9	11	31	1⅞	10	3	32	2⅜	10	7	33
9	7⅛	30	1⅝	9	11⅛	31	2¼	10	3⅛	32	2¾	10	7⅛	33
9	7¼	30	2	9	11¼	31	2⅝	10	3¼	32	3¼	10	7¼	33
9	7⅜	30	2½	9	11⅜	31	3	10	3⅜	32	3⅜	10	7⅜	33
9	7½	30	2⅞	9	11½	31	3⅜	10	3½	32	4	10	7½	33
9	7⅝	30	3¼	9	11⅝	31	3¾	10	3⅝	32	4⅜	10	7⅝	33
9	7¾	30	3⅝	9	11¾	31	4¼	10	3¾	32	4¾	10	7¾	33
9	7⅞	30	4	9	11⅞	31	4⅝	10	3⅞	32	5⅛	10	7⅞	33
9	8	30	4⅜	10	0	31	5	10	4	32	5½	10	8	33
9	8⅛	30	4¾	10	0⅛	31	5⅜	10	4⅛	32	6	10	8⅛	33
9	8¼	30	5¼	10	0¼	31	5¾	10	4¼	32	6⅜	10	8¼	33
9	8⅜	30	5⅝	10	0⅜	31	6⅛	10	4⅜	32	6¾	10	8⅜	33
9	8½	30	6	10	0½	31	6½	10	4½	32	7⅛	10	8½	33
9	8⅝	30	6⅜	10	0⅝	31	7	10	4⅝	32	7½	10	8⅝	33
9	8¾	30	6¾	10	0¾	31	7⅜	10	4¾	32	7⅞	10	8¾	33
9	8⅞	30	7⅛	10	0⅞	31	7¾	10	4⅞	32	8¼	10	8⅞	33

DIAMETERS AND CIRCUMFERENCES.

DIAMETER		CIRCUM-FERENCE		DIAMETER		CIRCUM-FERENCE		DIAMETER		CIRCUM-FERENCE.		DIAMETER		CIRCUM-FERENCE
FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT. IN.
10	9	33	9¼	11	1	34	9¾	11	5	35	10⅜	11	9	36 10⅞
10	9⅛	33	9⅝	11	1⅛	34	10¼	11	5⅛	35	10¾	11	9⅛	36 11¼
10	9¼	33	10	11	1¼	34	10⅝	11	5¼	35	11⅛	11	9¼	36 11¾
10	9⅜	33	10⅜	11	1⅜	34	11	11	5⅜	35	11½	11	9⅜	37 0⅛
10	9½	33	10⅞	11	1½	34	11⅜	11	5½	36	0	11	9½	37 0½
10	9⅝	33	11¼	11	1⅝	34	11¾	11	5⅝	36	0⅜	11	9⅝	37 0⅞
10	9¾	33	11⅝	11	1¾	35	0⅛	11	5¾	36	0¾	11	9¾	37 1⅜
10	9⅞	34	0	11	1⅞	35	0½	11	5⅞	36	1⅛	11	9⅞	37 1¾
10	10	34	0⅜	11	2	35	1	11	6	36	1½	11	10	37 2⅛
10	10⅛	34	0¾	11	2⅛	35	1⅜	11	6⅛	36	1⅞	11	10⅛	37 2½
10	10¼	34	1⅛	11	2¼	35	1¾	11	6¼	36	2⅜	11	10¼	37 2⅞
10	10⅜	34	1⅝	11	2⅜	35	2⅛	11	6⅜	36	2¾	11	10⅜	37 3⅛
10	10½	34	2	11	2½	35	2½	11	6½	36	3⅛	11	10½	37 3⅝
10	10⅝	34	2⅜	11	2⅝	35	2⅞	11	6⅝	36	3½	11	10⅝	37 4
10	10¾	34	2¾	11	2¾	35	3⅜	11	6¾	36	3⅞	11	10¾	37 4½
10	10⅞	34	3⅛	11	2⅞	35	3¾	11	6⅞	36	4¼	11	10⅞	37 4⅞
10	11	34	3½	11	3	35	4⅛	11	7	36	4⅝	11	11	37 5¼
10	11⅛	34	3⅞	11	3⅛	35	4½	11	7⅛	36	5	11	11⅛	37 5⅝
10	11¼	34	4⅜	11	3¼	35	4⅞	11	7¼	36	5⅛	11	11¼	37 6
10	11⅜	34	4¾	11	3⅜	35	5¼	11	7⅜	36	5⅞	11	11⅜	37 6⅜
10	11½	34	5⅛	11	3½	35	5⅝	11	7½	36	6¼	11	11½	37 6⅞
10	11⅝	34	5½	11	3⅝	35	6	11	7⅝	36	6⅝	11	11⅝	37 7¼
10	11¾	34	5⅞	11	3¾	35	6½	11	7¾	36	7	11	11¾	37 7⅝
10	11⅞	34	6¼	11	3⅞	35	6⅞	11	7⅞	36	7⅜	11	11⅞	37 8
11	0	34	6⅝	11	4	35	7¼	11	8	36	7¾	12	0	37 8⅜
11	0⅛	34	7	11	4⅛	35	7⅝	11	8⅛	36	8⅛	12	0⅛	37 8¾
11	0¼	34	7⅛	11	4¼	35	8	11	8¼	36	8½	12	0¼	37 9⅛
11	0⅜	34	7⅞	11	4⅜	35	8⅜	11	8⅜	36	8⅞	12	0⅜	37 9½
11	0½	34	8¼	11	4½	35	8⅞	11	8½	36	9¼	12	0½	37 10
11	0⅝	34	8⅝	11	4⅝	35	9¼	11	8⅝	36	9⅝	12	0⅝	37 10⅜
11	0¾	34	9	11	4¾	35	9⅝	11	8¾	36	10⅛	12	0¾	37 10¾
11	0⅞	34	9⅜	11	4⅞	35	10	11	8⅞	36	10½	12	0⅞	37 11⅛

DIAMETERS AND CIRCUMFERENCES.

DIAMETER		CIRCUM-FERENCE		DIAMETER		CIRCUM-FERENCE		DIAMETER		CIRCUM-FERENCE.		DIAMETER		CIRCU FERE
FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT.
12	1	37	11 1/8	12	5	39	0 1/8	12	9	40	0 3/8	13	1	41
12	1 1/8	38	0	12	5 1/8	39	0 1/2	12	9 1/8	40	1	13	1 1/8	41
12	1 1/4	38	0 3/8	12	5 1/4	39	0 7/8	12	9 1/4	40	1 3/8	13	1 1/4	41
12	1 3/8	38	0 3/4	12	5 3/8	39	1 1/4	12	9 3/8	40	1 7/8	13	1 3/8	41
12	1 1/2	38	1 1/8	12	5 1/2	39	1 3/8	12	9 1/2	40	2 1/4	13	1 1/2	41
12	1 5/8	38	1 1/2	12	5 5/8	39	2	12	9 5/8	40	2 5/8	13	1 5/8	41
12	1 3/4	38	1 7/8	12	5 3/4	39	2 3/8	12	9 3/4	40	3	13	1 3/4	41
12	1 7/8	38	2 1/4	12	5 7/8	39	2 7/8	12	9 7/8	40	3 3/8	13	1 7/8	41
12	2	38	2 5/8	12	6	39	3 1/4	12	10	40	3 3/4	13	2	41
12	2 1/8	38	3	12	6 1/8	39	3 5/8	12	10 1/8	40	4 1/8	13	2 1/8	41
12	2 1/4	38	3 1/2	12	6 1/4	39	4	12	10 1/4	40	4 5/8	13	2 1/4	41
12	2 3/8	38	3 7/8	12	6 3/8	39	4 3/8	12	10 3/8	40	5	13	2 3/8	41
12	2 1/2	38	4 1/4	12	6 1/2	39	4 3/4	12	10 1/2	40	5 3/8	13	2 1/2	41
12	2 5/8	38	4 5/8	12	6 5/8	39	5 1/4	12	10 5/8	40	5 3/4	13	2 5/8	41
12	2 3/4	38	5	12	6 3/4	39	5 5/8	12	10 3/4	40	6 1/8	13	2 3/4	41
12	2 7/8	38	5 3/8	12	6 7/8	39	6	12	10 7/8	40	6 1/2	13	2 7/8	41
12	3	38	5 3/4	12	7	39	6 3/8	12	11	40	6 7/8	13	3	41
12	3 1/8	38	6 1/8	12	7 1/8	39	6 3/4	12	11 1/8	40	7 3/8	13	3 1/8	41
12	3 1/4	38	6 5/8	12	7 1/4	39	7 1/8	12	11 1/4	40	7 3/4	13	3 1/4	41
12	3 3/8	38	7	12	7 3/8	39	7 1/2	12	11 3/8	40	8 1/8	13	3 3/8	41
12	3 1/2	38	7 3/8	12	7 1/2	39	7 7/8	12	11 1/2	40	8 1/2	13	3 1/2	41
12	3 5/8	38	7 3/4	12	7 5/8	39	8 3/8	12	11 5/8	40	8 7/8	13	3 5/8	41
12	3 3/4	38	8 1/8	12	7 3/4	39	8 3/4	12	11 3/4	40	9 1/4	13	3 3/4	41
12	3 7/8	38	8 1/2	12	7 7/8	39	9 1/8	12	11 7/8	40	9 5/8	13	3 7/8	41 1
12	4	38	9	12	8	39	9 1/2	13	0	40	10	13	4	41 1
12	4 1/8	38	9 3/8	12	8 1/8	39	9 7/8	13	0 1/8	40	10 3/8	13	4 1/8	41 1
12	4 1/4	38	9 3/4	12	8 1/4	39	10 1/4	13	0 1/4	40	10 7/8	13	4 1/4	41 1
12	4 3/8	38	10 1/8	12	8 3/8	39	10 5/8	13	0 3/8	40	11 1/4	13	4 3/8	41 1
12	4 1/2	38	10 1/2	12	8 1/2	39	11	13	0 1/2	40	11 5/8	13	4 1/2	42
12	4 5/8	38	10 7/8	12	8 5/8	39	11 1/2	13	0 5/8	41	0	13	4 5/8	42
12	4 3/4	38	11 1/4	12	8 3/4	39	11 7/8	13	0 3/4	41	0 3/8	13	4 3/4	42
12	4 7/8	38	11 3/8	12	8 7/8	40	0 1/4	13	0 7/8	41	0 7/8	13	4 7/8	42

DIAMETERS AND CIRCUMFERENCES.

DIAMETER		CIRCUM-FERENCE		DIAMETER		CIRCUM-FERENCE		DIAMETER		CIRCUM-FERENCE.		DIAMETER		CIRCUM-FERENCE
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT. IN.
13	5	42	1 3/4	13	9	43	2 3/8	14	1	44	2 7/8	14	5	45 3 1/2
13	5 1/8	42	2 1/8	13	9 1/8	43	2 3/4	14	1 1/8	44	3 1/4	14	5 1/8	45 3 7/8
13	5 1/4	42	2 1/2	13	9 1/4	43	3 1/8	14	1 1/4	44	3 3/4	14	5 1/4	45 4 1/4
13	5 3/8	42	3	13	9 3/8	43	3 1/2	14	1 3/8	44	4 1/8	14	5 3/8	45 4 5/8
13	5 1/2	42	3 3/8	13	9 1/2	43	3 7/8	14	1 1/2	44	4 1/2	14	5 1/2	45 5
13	5 5/8	42	3 3/4	13	9 5/8	43	4 1/4	14	1 5/8	44	4 7/8	14	5 5/8	45 5 3/8
13	5 3/4	42	4 1/8	13	9 3/4	43	4 3/4	14	1 3/4	44	5 1/4	14	5 3/4	45 5 7/8
13	5 7/8	42	4 1/2	13	9 7/8	43	5 1/8	14	1 7/8	44	5 5/8	14	5 7/8	45 6 1/4
13	6	42	4 7/8	13	10	43	5 1/2	14	2	44	6	14	6	45 6 5/8
13	6 1/8	42	5 1/4	13	10 1/8	43	5 7/8	14	2 1/8	44	6 3/8	14	6 1/8	45 7
13	6 1/4	42	5 3/4	13	10 1/4	43	6 1/4	14	2 1/4	44	6 7/8	14	6 1/4	45 7 3/8
13	6 3/8	42	6 1/8	13	10 3/8	43	6 5/8	14	2 3/8	44	7 1/4	14	6 3/8	45 7 3/4
13	6 1/2	42	6 1/2	13	10 1/2	43	7	14	2 1/2	44	7 5/8	14	6 1/2	45 8 1/4
13	6 5/8	42	6 7/8	13	10 5/8	43	7 1/2	14	2 5/8	44	8	14	6 5/8	45 8 5/8
13	6 3/4	42	7 1/4	13	10 3/4	43	7 7/8	14	2 3/4	44	8 3/8	14	6 3/4	45 9
13	6 7/8	42	7 5/8	13	10 7/8	43	8 1/4	14	2 7/8	44	8 3/4	14	6 7/8	45 9 3/8
13	7	42	8	13	11	43	8 5/8	14	3	44	9 1/8	14	7	45 9 3/4
13	7 1/8	42	8 1/2	13	11 1/8	43	9	14	3 1/8	44	9 1/2	14	7 1/8	45 10 1/8
13	7 1/4	42	8 7/8	13	11 1/4	43	9 3/8	14	3 1/4	44	10	14	7 1/4	45 10 1/2
13	7 3/8	42	9 1/4	13	11 3/8	43	9 3/4	14	3 3/8	44	10 3/8	14	7 3/8	45 10 7/8
13	7 1/2	42	9 5/8	13	11 1/2	43	10 1/4	14	3 1/2	44	10 3/4	14	7 1/2	45 11 3/8
13	7 5/8	42	10	13	11 5/8	43	10 5/8	14	3 5/8	44	11 1/8	14	7 5/8	45 11 3/4
13	7 3/4	42	10 3/8	13	11 3/4	43	11	14	3 3/4	44	11 1/2	14	7 3/4	46 0 1/8
13	7 7/8	42	10 5/8	13	11 7/8	43	11 3/8	14	3 7/8	44	11 7/8	14	7 7/8	46 0 1/2
13	8	42	11 1/4	14	0	44	11 3/4	14	4	45	0 3/8	14	8	46 0 7/8
13	8 1/8	42	11 5/8	14	0 1/8	44	0 1/8	14	4 1/8	45	0 3/4	14	8 1/8	46 1 1/4
13	8 1/4	43	0	14	0 1/4	44	0 1/2	14	4 1/4	45	1 1/8	14	8 1/4	46 1 5/8
13	8 3/8	43	0 3/8	14	0 3/8	44	0 5/8	14	4 3/8	45	1 1/2	14	8 3/8	46 2
13	8 1/2	43	0 3/4	14	0 1/2	44	1 3/8	14	4 1/2	45	1 7/8	14	8 1/2	46 2 1/4
13	8 5/8	43	1 1/8	14	0 5/8	44	1 1/4	14	4 5/8	45	2 1/4	14	8 5/8	46 2 7/8
13	8 3/4	43	1 1/2	14	0 3/4	44	2 1/8	14	4 3/4	45	2 3/4	14	8 3/4	46 3 1/4
13	8 7/8	43	1 7/8	14	0 7/8	44	2 1/2	14	4 7/8	45	3 1/8	14	8 7/8	46 3 5/8

DIAMETERS AND CIRCUMFERENCES.

DIAMETER		CIRCUM-FERENCE		DIAMETER		CIRCUM-FERENCE		DIAMETER		CIRCUM-FERENCE.		DIAMETER		CIRCUM-FERENCE
FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN	FT.	IN.	FT.	IN.	FT. IN
14	9	46	4	15	1	47	4⅛	15	5	48	5⅛	15	9	49 5
14	9⅛	46	4⅜	15	1⅛	47	5	15	5⅛	48	5⅜	15	9⅛	49 6
14	9¼	46	4⅞	15	1¼	47	5⅜	15	5¼	48	6	15	9¼	49 6
14	9⅜	46	5¼	15	1⅜	47	5¾	15	5⅜	48	6⅜	15	9⅜	49 6
14	9½	46	5⅝	15	1½	47	6¼	15	5½	48	6¾	15	9½	49 7
14	9⅝	46	6	15	1⅝	47	6⅝	15	5⅝	48	7⅛	15	9⅝	49 7
14	9¾	46	6⅜	15	1¾	47	7	15	5¾	48	7½	15	9¾	49 8
14	9⅞	46	6¾	15	1⅞	47	7⅜	15	5⅞	48	7⅞	15	9⅞	49 8
14	10	46	7⅛	15	2	47	7¾	15	6	48	8⅜	15	10	49 8
14	10⅛	46	7½	15	2⅛	47	8⅛	15	6⅛	48	8¾	15	10⅛	49 9
14	10¼	46	7⅞	15	2¼	47	8½	15	6¼	48	9⅛	15	10¼	49 9
14	10⅜	46	8⅜	15	2⅜	47	9	15	6⅜	48	9½	15	10⅜	49 10
14	10½	46	8¾	15	2½	47	9⅜	15	6½	48	9⅞	15	10½	49 10
14	10⅝	46	9⅛	15	2⅝	47	9¾	15	6⅝	48	10¼	15	10⅝	49 10
14	10¾	46	9½	15	2¾	47	10⅛	15	6¾	48	10⅝	15	10¾	49 11
14	10⅞	46	9⅞	15	2⅞	47	10½	15	6⅞	48	11	15	10⅞	49 11
14	11	46	10⅜	15	3	47	10⅞	15	7	48	11½	15	11	50 0
14	11⅛	46	10¾	15	3⅛	47	11¼	15	7⅛	48	11⅞	15	11⅛	50 0
14	11¼	46	11⅛	15	3¼	47	11¾	15	7¼	49	0¼	15	11¼	50 0
14	11⅜	46	11½	15	3⅜	48	0⅛	15	7⅜	49	0⅝	15	11⅜	50 1
14	11½	46	11⅞	15	3½	48	0½	15	7½	49	1	15	11½	50 1
14	11⅝	47	0¼	15	3⅝	48	0⅞	15	7⅝	49	1⅜	15	11⅝	50 2
14	11¾	47	0¾	15	3¾	48	1¼	15	7¾	49	1¾	15	11¾	50 2
14	11⅞	47	1⅛	15	3⅞	48	1⅝	15	7⅞	49	2¼	15	11⅞	50 2
15	0	47	1½	15	4	48	2	15	8	49	2⅝	16	0	50 3
15	0⅛	47	1⅞	15	4⅛	48	2⅜	15	8⅛	49	3	16	0⅛	50 3
15	0¼	47	2¼	15	4¼	48	2⅞	15	8¼	49	3⅜	16	0¼	50 4
15	0⅜	47	2⅝	15	4⅜	48	3¼	15	8⅜	49	3¾	16	0⅜	50 4
15	0½	47	3	15	4½	48	3⅝	15	8½	49	4⅛	16	0½	50 4
15	0⅝	47	3⅜	15	4⅝	48	4	15	8⅝	49	4½	16	0⅝	50 5
15	0¾	47	3⅞	15	4¾	48	4⅜	15	8¾	49	5	16	0¾	50 5
15	0⅞	47	4¼	15	4⅞	48	4¾	15	8⅞	49	5⅜	16	0⅞	50 5

THE BOILER-MAKERS'

AND

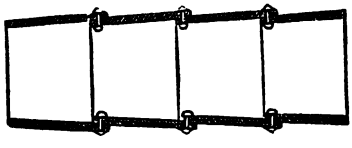
IRON SHIP-BUILDERS' COMPANION.

SECTION V.

TEMPLATE MAKING.

REMARKS.—Boilers, when made of a cylindrical form, usually consist of a series of conic frustums inserted into each other, and riveted together; the height of each frustum being the breadth of plate of iron, and the inside diameter at large end equal to the given diameter of the boiler, that of the small end twice the thickness of plate less than the large end. This will be clearly understood on inspection of figure 1.

FIG. 1.



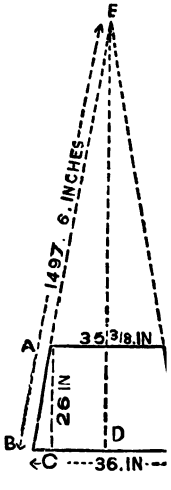
In preparing to make such a boiler, the PLATER generally procures a template or pattern plate, the length of which is some known proportion of the circumference of the boiler, and breadth suitable to the plates of iron of which the boiler is to be made;

this template is usually a thin sheet of iron or frame of wc made to the proper length and shape and pierced with holes the rivets, so that it forms a complete pattern by which the wl of the plates can be at once drawn and punched. The metho making the template will be easily understood by the followin

EXAMPLE.—Let it be required to build a tubular boiler of 36 : inside diameter, to be formed of 2 plates in the circle, the brea of the plates 26 inches, and the thickness of plates $\frac{5}{16}$ of an in the distance between centres of rivet holes about 2 inches.

By the above example, it is clear the frustum of one of the cones composing the boiler will be according to figure 2, as A B G H.

FIG. 2.



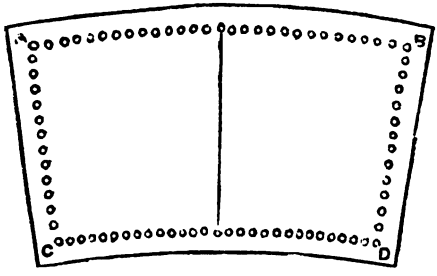
The first step will be to find the point or vertex of the cone E, of which the frustum is a part; this will be found by the following proportion, which is derived from the sixth book of Euclid, viz. :—BC : BD :: BA : BE, or in words the thickness of the boiler plate is to the radius of the boiler, as the breadth of the plate is to the slant edge of the cone, which will be the radius with which the curve of the outside of the template must be drawn. The calculation is given at length.

As $\frac{5}{16}$ in. : 18 in. :: 26 in. : slant edge of cone=1497·6.

$$\begin{array}{r} 18 \\ \hline 468 \\ 16 \\ \hline 5\,)\,7488 \\ \hline 1497{\cdot}6 \text{ inches.} \end{array}$$

To 86 inches, the inside diameter of boiler, add $\frac{5}{16}$ of an inch, the thickness of plate, equal to $86\frac{5}{16}$ inches, the circumference of which is 114·0793 inches, and as it is proposed to have 2 plates in the circle, the length of each plate will be 57·0396 inches, on the outer curve line. And as the diameter of small end of the frustum is twice the thickness of the plate less than the larger, or $35\frac{3}{8}$ inches, to which add thickness of plate, equal to $35\frac{11}{16}$ inches, the circumference of which is 112·1158 inches; the length of plate on the inner curve line will be $\frac{112.1158}{2}$=56·0579 inches, the template therefore, will be as figure 8.

Fig. 8.



A B=57·0396 inches, C D=56·0579 inches, A C=26 inches.

It will be perceived that as the radius with which the outside of template is to be drawn, is 1497·6 inches, it would be inconvenient to draw a circle with a radius of that length by the common mode; therefore some other method has to be adopted for finding the curve; the one usually taken is to calculate the versed line corresponding to the curve of the template, and then trace the curve by means of a thin lath bent round the three points, viz. :—the two extremities of the straight line and the versed line.

points, A H D, the curve of the out side of template may be drawn ; the inside line may be drawn in a similar manner by marking off E B, E C, each equal 28 inches, half the length of the inside, and and A B, D C, and H I, equal to 26 inches, the breadth of the plate.

Table 27, page 149, will be found of the utmost utility to the template maker, and will save him an immense amount of time and trouble in making calculations for frustums of cones for cylindrical boilers.

EXAMPLE.—Required the calculations for the template for a boiler, whose inside diameter is to be 4 feet, to be made of 3 plates in the circle ; the breadth of the plate 2 feet 4 inches, and thickness of plate $\frac{3}{8}$ of an inch ; the distance between centres of rivet holes to be about 2 inches.

In page 158 will be found the required calculations for the above example. And here I would impress on the workman who wishes to be correct in his operations, to pay strict attention to the lengths given in the table, assuring him that if the template be properly made, there is no doubt but when the plates are bent and applied to each other the holes for the rivets will be exactly opposite, and the inside diameter of the flue, tube, or boiler will be as required.

TABLE XXVII.

TEMPLATE MAKING.

Inside diameter of Tube, Flue, or Boiler.		Thickness of Plate.	Number of Plates in the Circle.	Breadth of Plate between centres of rivet holes.		Length of straight line between centres of rivet holes of Large end of Plate.		Length of straight line between centres of rivet holes of Small end of Plate.		Versed line.
FT.	IN.	Parts of an Inch.	No.	FT.	IN.	FT.	IN.	FT.	IN.	Parts of an Inch.
2	0	$\frac{5}{16}$	2	2	0	3	$2\frac{1}{8}$	3	$1\frac{1}{8}$	$\frac{3}{16}$
2	0	$\frac{5}{16}$	2	2	2	3	$2\frac{1}{8}$	3	$1\frac{1}{8}$	$\frac{3}{16}$
2	0	$\frac{5}{16}$	2	2	4	3	$2\frac{1}{8}$	3	$1\frac{1}{8}$	$\frac{5}{32}$
2	0	$\frac{5}{16}$	2	2	6	3	$2\frac{1}{8}$	3	$1\frac{1}{8}$	$\frac{5}{32}$
2	0	$\frac{5}{16}$	2	2	8	3	$2\frac{1}{8}$	3	$1\frac{1}{8}$	$\frac{5}{32}$
2	0	$\frac{5}{16}$	2	2	10	3	$2\frac{1}{8}$	3	$1\frac{1}{8}$	$\frac{9}{64}$
2	0	$\frac{5}{16}$	2	3	0	3	$2\frac{1}{8}$	3	$1\frac{1}{8}$	$\frac{1}{8}$
2	0	$\frac{5}{16}$	2	3	2	3	$2\frac{1}{8}$	3	$1\frac{1}{8}$	$\frac{1}{8}$
2	0	$\frac{5}{16}$	2	3	4	3	$2\frac{1}{8}$	3	$1\frac{1}{8}$	$\frac{1}{8}$
2	0	$\frac{5}{16}$	2	3	6	3	$2\frac{1}{8}$	3	$1\frac{1}{8}$	$\frac{1}{8}$
2	2	$\frac{5}{16}$	2	2	0	3	$5\frac{1}{4}$	3	$4\frac{1}{4}$	$\frac{3}{16}$
2	2	$\frac{5}{16}$	2	2	2	3	$5\frac{1}{4}$	3	$4\frac{1}{4}$	$\frac{3}{16}$
2	2	$\frac{5}{16}$	2	2	4	3	$5\frac{1}{4}$	3	$4\frac{1}{4}$	$\frac{1}{16}$
2	2	$\frac{5}{16}$	2	2	6	3	$5\frac{1}{4}$	3	$4\frac{1}{4}$	$\frac{5}{32}$
2	2	$\frac{5}{16}$	2	2	8	3	$5\frac{1}{4}$	3	$4\frac{1}{4}$	$\frac{5}{32}$
2	2	$\frac{5}{16}$	2	2	10	3	$5\frac{1}{4}$	3	$4\frac{1}{4}$	$\frac{5}{32}$
2	2	$\frac{5}{16}$	2	3	0	3	$5\frac{1}{4}$	3	$4\frac{1}{4}$	$\frac{9}{64}$
2	2	$\frac{5}{16}$	2	3	2	3	$5\frac{1}{4}$	3	$4\frac{1}{4}$	$\frac{1}{8}$
2	2	$\frac{5}{16}$	2	3	4	3	$5\frac{1}{4}$	3	$4\frac{1}{4}$	$\frac{1}{8}$
2	2	$\frac{5}{16}$	2	3	6	3	$5\frac{1}{4}$	3	$4\frac{1}{4}$	$\frac{1}{8}$
2	4	$\frac{5}{16}$	2	2	0	3	$8\frac{3}{8}$	3	$7\frac{3}{8}$	$\frac{7}{32}$
2	4	$\frac{5}{16}$	2	2	2	3	$8\frac{3}{8}$	3	$7\frac{3}{8}$	$\frac{3}{16}$
2	4	$\frac{5}{16}$	2	2	4	3	$8\frac{3}{8}$	3	$7\frac{3}{8}$	$\frac{3}{16}$
2	4	$\frac{5}{16}$	2	2	6	3	$8\frac{3}{8}$	3	$7\frac{3}{8}$	$\frac{1}{16}$
2	4	$\frac{5}{16}$	2	2	8	3	$8\frac{3}{8}$	3	$7\frac{3}{8}$	$\frac{5}{32}$
2	4	$\frac{5}{16}$	2	2	10	3	$8\frac{3}{8}$	3	$7\frac{3}{8}$	$\frac{5}{32}$
2	4	$\frac{5}{16}$	2	3	0	3	$8\frac{3}{8}$	3	$7\frac{3}{8}$	$\frac{5}{32}$
2	4	$\frac{5}{16}$	2	3	2	3	$8\frac{3}{8}$	3	$7\frac{3}{8}$	$\frac{9}{64}$
2	4	$\frac{5}{16}$	2	3	4	3	$8\frac{3}{8}$	3	$7\frac{3}{8}$	$\frac{1}{8}$
2	4	$\frac{5}{16}$	2	3	6	3	$8\frac{3}{8}$	3	$7\frac{3}{8}$	$\frac{1}{8}$

Inside diameter of Tube, Fire, or Boiler.		Thickness of Plate.	Number of Plates in the Circle.	Breadth of Plate between centres of rivet holes.		Length of straight line between centres of rivet holes of Large end of Plate.		Length of straight line between centres of rivet holes of Small end of Plate.		Versed line.
FT.	IN.	Parts of an Inch.	No.	FT.	IN.	FT.	IN.	FT.	IN.	Parts of an Inch.
2	6	5/16	2	2	0	3	11 1/2	3	10 1/2	1/8 5/8
2	6	5/16	2	2	2	3	11 1/2	3	10 1/2	3/4 3/8
2	6	5/16	2	2	4	3	11 1/2	3	10 1/2	3/4 3/8
2	6	5/16	2	2	6	3	11 1/2	3	10 1/2	1/16
2	6	5/16	2	2	8	3	11 1/2	3	10 1/2	1/16
2	6	5/16	2	2	10	3	11 1/2	3	10 1/2	1/8 1/4
2	6	5/16	2	3	0	3	11 1/2	3	10 1/2	3/4 3/8
2	6	5/16	2	3	2	3	11 1/2	3	10 1/2	3/4 3/8
2	6	5/16	2	3	4	3	11 1/2	3	10 1/2	0 9/16
2	6	5/16	2	3	6	3	11 1/2	3	10 1/2	0 9/16
2	8	5/16	2	2	0	4	2 5/8	4	1 5/8	1/4
2	8	5/16	2	2	2	4	2 5/8	4	1 5/8	1/8 5/16
2	8	5/16	2	2	4	4	2 5/8	4	1 5/8	3/4 3/8
2	8	5/16	2	2	6	4	2 5/8	4	1 5/8	1/8 3/16
2	8	5/16	2	2	8	4	2 5/8	4	1 5/8	1/16
2	8	5/16	2	2	10	4	2 5/8	4	1 5/8	1/16
2	8	5/16	2	3	0	4	2 5/8	4	1 5/8	1/8 1/4
2	8	5/16	2	3	2	4	2 5/8	4	1 5/8	3/4 3/8
2	8	5/16	2	3	4	4	2 5/8	4	1 5/8	3/4 3/8
2	8	5/16	2	3	6	4	2 5/8	4	1 5/8	3/4 3/8
2	10	5/16	2	2	0	4	5 3/4	4	4 3/4	1/8 7/16
2	10	5/16	2	2	2	4	5 3/4	4	4 3/4	1/4
2	10	5/16	2	2	4	4	5 3/4	4	4 3/4	1/8 5/16
2	10	5/16	2	2	6	4	5 3/4	4	4 3/4	3/4 3/8
2	10	5/16	2	2	8	4	5 3/4	4	4 3/4	1/8 3/16
2	10	5/16	2	2	10	4	5 3/4	4	4 3/4	3/16
2	10	5/16	2	3	0	4	5 3/4	4	4 3/4	3/16
2	10	5/16	2	3	2	4	5 3/4	4	4 3/4	1/8 1/4
2	10	5/16	2	3	4	4	5 3/4	4	4 3/4	3/4 3/8
2	10	5/16	2	3	6	4	5 3/4	4	4 3/4	3/4 3/8

Inside diameter of Tube, Flue, or Boiler.		Thickness of Plate.	Number of Plates in the Circle.	Breadth of Plate between centres of rivet holes.		Length of straight line between centres of rivet holes of Large end of Plate.		Length of straight line between centres of rivet holes of Small end of Plate.		Versed line.
FT.	IN.	Parts of an Inch.	No.	FT.	IN.	FT.	IN.	FT.	IN.	Parts of an Inch.
3	0	$\frac{5}{16}$	2	2	0	4	9	4	8	$\frac{9}{32}$
3	0	$\frac{5}{16}$	2	2	2	4	9	4	8	$\frac{1}{4}$
3	0	$\frac{5}{16}$	2	2	4	4	9	4	8	$\frac{1}{4}$
3	0	$\frac{5}{16}$	2	2	6	4	9	4	8	$\frac{7}{32}$
3	0	$\frac{5}{16}$	2	2	8	4	9	4	8	$\frac{7}{32}$
3	0	$\frac{5}{16}$	2	2	10	4	9	4	8	$\frac{1}{8}\frac{3}{4}$
3	0	$\frac{5}{16}$	2	3	0	4	9	4	8	$\frac{3}{16}$
3	0	$\frac{5}{16}$	2	3	2	4	9	4	8	$\frac{3}{16}$
3	0	$\frac{5}{16}$	2	3	4	4	9	4	8	$\frac{1}{8}\frac{1}{4}$
3	0	$\frac{5}{16}$	2	3	6	4	9	4	8	$\frac{1}{8}\frac{1}{4}$
3	2	$\frac{5}{16}$	2	2	0	5	$0\frac{1}{8}$	4	$11\frac{1}{8}$	$\frac{1}{8}\frac{9}{4}$
3	2	$\frac{5}{16}$	2	2	2	5	$0\frac{1}{8}$	4	$11\frac{1}{8}$	$\frac{9}{32}$
3	2	$\frac{5}{16}$	2	2	4	5	$0\frac{1}{8}$	4	$11\frac{1}{8}$	$\frac{1}{8}\frac{7}{4}$
3	2	$\frac{5}{16}$	2	2	6	5	$0\frac{1}{8}$	4	$11\frac{1}{8}$	$\frac{1}{4}$
3	2	$\frac{5}{16}$	2	2	8	5	$0\frac{1}{8}$	4	$11\frac{1}{8}$	$\frac{7}{32}$
3	2	$\frac{5}{16}$	2	2	10	5	$0\frac{1}{8}$	4	$11\frac{1}{8}$	$\frac{7}{32}$
3	2	$\frac{5}{16}$	2	3	0	5	$0\frac{1}{8}$	4	$11\frac{1}{8}$	$\frac{1}{8}\frac{3}{4}$
3	2	$\frac{5}{16}$	2	3	2	5	$0\frac{1}{8}$	4	$11\frac{1}{8}$	$\frac{3}{16}$
3	2	$\frac{5}{16}$	2	3	4	5	$0\frac{1}{8}$	4	$11\frac{1}{8}$	$\frac{3}{16}$
3	2	$\frac{5}{16}$	2	3	6	5	$0\frac{1}{8}$	4	$11\frac{1}{8}$	$\frac{1}{8}\frac{1}{4}$
3	4	$\frac{5}{16}$	2	2	0	5	$3\frac{1}{4}$	5	$2\frac{1}{4}$	$\frac{2}{8}\frac{1}{4}$
3	4	$\frac{5}{16}$	2	2	2	5	$3\frac{1}{4}$	5	$2\frac{1}{4}$	$\frac{1}{8}\frac{9}{4}$
3	4	$\frac{5}{16}$	2	2	4	5	$3\frac{1}{4}$	5	$2\frac{1}{4}$	$\frac{9}{32}$
3	4	$\frac{5}{16}$	2	2	6	5	$3\frac{1}{4}$	5	$2\frac{1}{4}$	$\frac{1}{4}$
3	4	$\frac{5}{16}$	2	2	8	5	$3\frac{1}{4}$	5	$2\frac{1}{4}$	$\frac{1}{8}\frac{5}{4}$
3	4	$\frac{5}{16}$	2	2	10	5	$3\frac{1}{4}$	5	$2\frac{1}{4}$	$\frac{7}{32}$
3	4	$\frac{5}{16}$	2	3	0	5	$3\frac{1}{4}$	5	$2\frac{1}{4}$	$\frac{1}{8}\frac{3}{4}$
3	4	$\frac{5}{16}$	2	3	2	5	$3\frac{1}{4}$	5	$2\frac{1}{4}$	$\frac{1}{8}\frac{3}{4}$
3	4	$\frac{5}{16}$	2	3	4	5	$3\frac{1}{4}$	5	$2\frac{1}{4}$	$\frac{3}{16}$
3	4	$\frac{5}{16}$	2	3	6	5	$3\frac{1}{4}$	5	$2\frac{1}{4}$	$\frac{3}{16}$

Inside diameter of Tube, Flue, or Boiler.		Thickness of Plate.	Number of Plates in the Circle.	Breadth of Plate between centres of rivet holes.		Length of straight line between centres of rivet holes of Large end of Plate.		Length of straight line between centres of rivet holes of Small end of Plate.		Versed line.
FT.	IN.	Parts of an Inch.	No.	FT.	IN.	FT.	IN.	FT.	IN.	Parts of an Inch.
3	6	$\frac{5}{16}$	2	2	0	5	$6\frac{3}{8}$	5	$5\frac{3}{8}$	$\frac{2}{6}\frac{1}{4}$
3	6	$\frac{5}{16}$	2	2	2	5	$6\frac{3}{8}$	5	$5\frac{3}{8}$	$\frac{5}{16}$
3	6	$\frac{5}{16}$	2	2	4	5	$6\frac{3}{8}$	5	$5\frac{3}{8}$	$\frac{9}{32}$
3	6	$\frac{5}{16}$	2	2	6	5	$6\frac{3}{8}$	5	$5\frac{3}{8}$	$\frac{1}{6}\frac{7}{4}$
3	6	$\frac{5}{16}$	2	2	8	5	$6\frac{3}{8}$	5	$5\frac{3}{8}$	$\frac{1}{4}$
3	6	$\frac{5}{16}$	2	2	10	5	$6\frac{3}{8}$	5	$5\frac{3}{8}$	$\frac{1}{6}\frac{5}{4}$
3	6	$\frac{5}{16}$	2	3	0	5	$6\frac{3}{8}$	5	$5\frac{3}{8}$	$\frac{7}{32}$
3	6	$\frac{5}{16}$	2	3	2	5	$6\frac{3}{8}$	5	$5\frac{3}{8}$	$\frac{1}{6}\frac{3}{4}$
3	6	$\frac{5}{16}$	2	3	4	5	$6\frac{3}{8}$	5	$5\frac{3}{8}$	$\frac{1}{6}\frac{3}{4}$
3	6	$\frac{5}{16}$	2	3	6	5	$6\frac{3}{8}$	5	$5\frac{3}{8}$	$\frac{5}{16}$
2	0	$\frac{5}{16}$	2	2	0	3	$2\frac{1}{4}$	3	$1\frac{1}{8}$	$\frac{1}{6}\frac{5}{4}$
2	0	$\frac{5}{16}$	2	2	2	3	$2\frac{1}{4}$	3	$1\frac{1}{8}$	$\frac{7}{32}$
2	0	$\frac{5}{16}$	2	2	4	3	$2\frac{1}{4}$	3	$1\frac{1}{8}$	$\frac{1}{6}\frac{3}{4}$
2	0	$\frac{5}{16}$	2	2	6	3	$2\frac{1}{4}$	3	$1\frac{1}{8}$	$\frac{3}{16}$
2	0	$\frac{5}{16}$	2	2	8	3	$2\frac{1}{4}$	3	$1\frac{1}{8}$	$\frac{1}{6}\frac{1}{4}$
2	0	$\frac{5}{16}$	2	2	10	3	$2\frac{1}{4}$	3	$1\frac{1}{8}$	$\frac{5}{32}$
2	0	$\frac{5}{16}$	2	3	0	3	$2\frac{1}{4}$	3	$1\frac{1}{8}$	$\frac{5}{32}$
2	0	$\frac{5}{16}$	2	3	2	3	$2\frac{1}{4}$	3	$1\frac{1}{8}$	$\frac{9}{64}$
2	0	$\frac{5}{16}$	2	3	4	3	$2\frac{1}{4}$	3	$1\frac{1}{8}$	$\frac{9}{64}$
2	0	$\frac{5}{16}$	2	3	6	3	$2\frac{1}{4}$	3	$1\frac{1}{8}$	$\frac{1}{8}$
2	2	$\frac{5}{16}$	2	2	0	3	$5\frac{3}{8}$	3	$4\frac{1}{4}$	$\frac{1}{4}$
2	2	$\frac{5}{16}$	2	2	2	3	$5\frac{3}{8}$	3	$4\frac{1}{4}$	$\frac{1}{6}\frac{5}{4}$
2	2	$\frac{5}{16}$	2	2	4	3	$5\frac{3}{8}$	3	$4\frac{1}{4}$	$\frac{7}{32}$
2	2	$\frac{5}{16}$	2	2	6	3	$5\frac{3}{8}$	3	$4\frac{1}{4}$	$\frac{1}{6}\frac{3}{4}$
2	2	$\frac{5}{16}$	2	2	8	3	$5\frac{3}{8}$	3	$4\frac{1}{4}$	$\frac{3}{16}$
2	2	$\frac{5}{16}$	2	2	10	3	$5\frac{3}{8}$	3	$4\frac{1}{4}$	$\frac{1}{6}\frac{1}{4}$
2	2	$\frac{5}{16}$	2	3	0	3	$5\frac{3}{8}$	3	$4\frac{1}{4}$	$\frac{1}{6}\frac{1}{4}$
2	2	$\frac{5}{16}$	2	3	2	3	$5\frac{3}{8}$	3	$4\frac{1}{4}$	$\frac{5}{32}$
2	2	$\frac{5}{16}$	2	3	4	3	$5\frac{3}{8}$	3	$4\frac{1}{4}$	$\frac{9}{64}$
2	2	$\frac{5}{16}$	2	3	6	3	$5\frac{3}{8}$	3	$4\frac{1}{4}$	$\frac{9}{64}$

Inside diameter of Tube, Flue, or Boiler.		Thickness of Plate.	Number of Plates in the Circle.	Breadth of Plate between centres of rivet holes.		Length of straight line between centres of rivet holes of Large end of Plate.		Length of straight line between centres of rivet holes of Small end of Plate.		Versed line.
FT.	IN.	Parts of an Inch.	No.	FT.	IN.	FT.	IN.	FT.	IN.	Parts of an Inch.
2	4		2	2	0	3	8½	3	7⅜	1/6 7/4
2	4		2	2	2	3	8½	3	7⅜	1/4
2	4		2	2	4	3	8½	3	7⅜	1/6 5/4
2	4		2	2	6	3	8½	3	7⅜	3/8 7/8
2	4		2	2	8	3	8½	3	7⅜	1/6 3/4
2	4		2	2	10	3	8½	3	7⅜	1/8 3/8
2	4		2	3	0	3	8½	3	7⅜	1/8 3/8
2	4		2	3	2	3	8½	3	7⅜	1/6 1/4
2	4		2	3	4	3	8½	3	7⅜	3/8 5/8
2	4		2	3	6	3	8½	3	7⅜	3/8 5/8
2	6		2	2	0	3	11⅝	3	10½	3/8 9/8
2	6		2	2	2	3	11⅝	3	10½	1/6 7/4
2	6		2	2	4	3	11⅝	3	10½	3/8 9/8
2	6		2	2	6	3	11⅝	3	10½	1/6 5/4
2	6		2	2	8	3	11⅝	3	10½	3/8 7/8
2	6		2	2	10	3	11⅝	3	10½	1/6 3/4
2	6		2	3	0	3	11⅝	3	10½	1/8 3/8
2	6		2	3	2	3	11⅝	3	10½	1/8 3/8
2	6		2	3	4	3	11⅝	3	10½	3/8 5/8
2	6		2	3	6	3	11⅝	3	10½	3/8 5/8
2	8		2	2	0	4	2¾	4	1⅝	3/8 9/8
2	8		2	2	2	4	2¾	4	1⅝	1/6 7/4
2	8		2	2	4	4	2¾	4	1⅝	1/4
2	8		2	2	6	4	2¾	4	1⅝	1/4
2	8		2	2	8	4	2¾	4	1⅝	1/4 5/4
2	8		2	2	10	4	2¾	4	1⅝	3/8 7/8
2	8		2	3	0	4	2¾	4	1⅝	1/6 3/4
2	8		2	3	2	4	2¾	4	1⅝	1/8 3/8
2	8		2	3	4	4	2¾	4	1⅝	1/8 3/8
2	8		2	3	6	4	2¾	4	1⅝	1/8 3/8

Inside diameter of Tube, Flue, or Boiler.		Thickness of Plate.	Number of Plates in the Circle.	Breadth of Plate between centres of rivet holes.		Length of straight line between centres of rivet holes of Large end of Plate.		Length of straight line between centres of rivet holes of Small end of Plate.		Versed line.
FT.	IN.	Parts of an Inch.	No.	FT.	IN.	FT.	IN.	FT.	IN.	Parts of an Inch.
2	10		2	2	0	4	$5\frac{7}{8}$	4	$4\frac{3}{4}$	$\frac{5}{16}$
2	10		2	2	2	4	$5\frac{7}{8}$	4	$4\frac{3}{4}$	$\frac{5}{16}$
2	10		2	2	4	4	$5\frac{7}{8}$	4	$4\frac{3}{4}$	$\frac{9}{32}$
2	10		2	2	6	4	$5\frac{7}{8}$	4	$4\frac{3}{4}$	$\frac{1}{4}$
2	10		2	2	8	4	$5\frac{7}{8}$	4	$4\frac{3}{4}$	$\frac{1}{4}$
2	10		2	2	10	4	$5\frac{7}{8}$	4	$4\frac{3}{4}$	$\frac{5}{16}$
2	10		2	3	0	4	$5\frac{7}{8}$	4	$4\frac{3}{4}$	$\frac{7}{32}$
2	10		2	3	2	4	$5\frac{7}{8}$	4	$4\frac{3}{4}$	$\frac{3}{16}$
2	10		2	3	4	4	$5\frac{7}{8}$	4	$4\frac{3}{4}$	$\frac{3}{16}$
2	10		2	3	6	4	$5\frac{7}{8}$	4	$4\frac{3}{4}$	$\frac{3}{16}$
3	0		2	2	0	4	9	4	$7\frac{7}{8}$	$\frac{1}{32}$
3	0		2	2	2	4	9	4	$7\frac{7}{8}$	$\frac{5}{16}$
3	0		2	2	4	4	9	4	$7\frac{7}{8}$	$\frac{9}{16}$
3	0		2	2	6	4	9	4	$7\frac{7}{8}$	$\frac{9}{32}$
3	0		2	2	8	4	9	4	$7\frac{7}{8}$	$\frac{7}{16}$
3	0		2	2	10	4	9	4	$7\frac{7}{8}$	$\frac{1}{4}$
3	0		2	3	0	4	9	4	$7\frac{7}{8}$	$\frac{5}{16}$
3	0		2	3	2	4	9	4	$7\frac{7}{8}$	$\frac{7}{32}$
3	0		2	3	4	4	9	4	$7\frac{7}{8}$	$\frac{3}{16}$
3	0		2	3	6	4	9	4	$7\frac{7}{8}$	$\frac{3}{16}$
3	2		2	2	0	5	$0\frac{1}{8}$	4	11	$\frac{1}{32}$
3	2		2	2	2	5	$0\frac{1}{8}$	4	11	$\frac{1}{32}$
3	2		2	2	4	5	$0\frac{1}{8}$	4	11	$\frac{5}{16}$
3	2		2	2	6	5	$0\frac{1}{8}$	4	11	$\frac{5}{16}$
3	2		2	2	8	5	$0\frac{1}{8}$	4	11	$\frac{7}{16}$
3	2		2	2	10	5	$0\frac{1}{8}$	4	11	$\frac{1}{4}$
3	2		2	3	0	5	$0\frac{1}{8}$	4	11	$\frac{5}{16}$
3	2		2	3	2	5	$0\frac{1}{8}$	4	11	$\frac{7}{32}$
3	2		2	3	4	5	$0\frac{1}{8}$	4	11	$\frac{3}{16}$
3	2		2	3	6	5	$0\frac{1}{8}$	4	11	$\frac{3}{16}$

Inside diameter of Tube, Flue, or Boiler.		Thickness of Plate.	Number of Plates in the Circle.	Breadth of Plate between centres of rivet holes.		Length of straight line between centres of rivet holes of Large end of Plate.		Length of straight line between centres of rivet holes of Small end of Plate.		Versed line.
FT.	IN.	Parts of an Inch.	No.	FT.	IN.	FT.	IN.	FT.	IN.	Parts of an Inch.
3	4		2	2	0	5	3	5	2¼	⅜
3	4		2	2	2	5	3	5	2¼	1 1/2
3	4		2	2	4	5	3	5	2¼	1 1/2
3	4		2	2	6	5	3	5	2¼	1 5/6
3	4		2	2	8	5	3	5	2¼	3 9/2
3	4		2	2	10	5	3	5	2¼	1 7/4
3	4		2	3	0	5	3	5	2¼	¼
3	4		2	3	2	5	3	5	2¼	1 5/4
3	4		2	3	4	5	3	5	2¼	3 7/2
3	4		2	3	6	5	3	5	2¼	3 7/2
3	6		2	2	0	5	6½	5	5⅜	3 3/8
3	6		2	2	2	5	6½	5	5⅜	⅜
3	6		2	2	4	5	6½	5	5⅜	1 1/2
3	6		2	2	6	5	6½	5	5⅜	1 1/2
3	6		2	2	8	5	6½	5	5⅜	1 5/6
3	6		2	2	10	5	6½	5	5⅜	3 9/2
3	6		2	3	0	5	6½	5	5⅜	1 7/4
3	6		2	3	2	5	6½	5	5⅜	¼
3	6		2	3	4	5	6½	5	5⅜	1 5/4
3	6		2	3	6	5	6½	5	5⅜	3 7/2
3	8		2	2	0	5	9⅝	5	8½	1 7/6
3	8		2	2	2	5	9⅝	5	8½	1 3/2
3	8		2	2	4	5	9⅝	5	8½	1 5/6
3	8		2	2	6	5	9⅝	5	8½	1 1/2
3	8		2	2	8	5	9⅝	5	8½	1 5/6
3	8		2	2	10	5	9⅝	5	8½	1 5/6
3	8		2	3	0	5	9⅝	5	8½	3 9/2
3	8		2	3	2	5	9⅝	5	8½	3 0/2
3	8		2	3	4	5	9⅝	5	8½	¼
3	8		2	3	6	5	9⅝	5	8½	¼

Inside diameter of Tube, Flue, or Boiler.		Thickness of Plate	Number of Plates in the Circle.	Breadth of Plate between centres of rivet holes.		Length of straight line between centres of rivet holes of Large end of Plate.		Length of straight line between centres of rivet holes of Small end of Plate.		Versed line.
FT.	IN.	Parts of an Inch.	No.	FT.	IN.	FT.	IN.	FT.	IN.	Parts of an Inch.
3	8	$\frac{5}{16}$	3	2	0	3	$10\frac{5}{16}$	3	$9\frac{5}{16}$	$\frac{3}{16}$
3	8	$\frac{5}{16}$	3	2	2	3	$10\frac{5}{16}$	3	$9\frac{5}{16}$	$\frac{11}{64}$
3	8	$\frac{5}{16}$	3	2	4	3	$10\frac{5}{16}$	3	$9\frac{5}{16}$	$\frac{5}{32}$
3	8	$\frac{5}{16}$	3	2	6	3	$10\frac{5}{16}$	3	$9\frac{5}{16}$	$\frac{9}{64}$
3	8	$\frac{5}{16}$	3	2	8	3	$10\frac{5}{16}$	3	$9\frac{5}{16}$	$\frac{9}{64}$
3	8	$\frac{5}{16}$	3	2	10	3	$10\frac{5}{16}$	3	$9\frac{5}{16}$	$\frac{4}{32}$
3	8	$\frac{5}{16}$	3	3	0	3	$10\frac{5}{16}$	3	$9\frac{5}{16}$	$\frac{4}{32}$
3	8	$\frac{5}{16}$	3	3	2	3	$10\frac{5}{16}$	3	$9\frac{5}{16}$	$\frac{7}{64}$
3	8	$\frac{5}{16}$	3	3	4	3	$10\frac{5}{16}$	3	$9\frac{5}{16}$	$\frac{7}{64}$
3	8	$\frac{5}{16}$	3	3	6	3	$10\frac{5}{16}$	3	$9\frac{5}{16}$	$\frac{7}{64}$
3	10	$\frac{5}{16}$	3	2	0	4	$0\frac{1}{2}$	3	$11\frac{3}{4}$	$\frac{13}{64}$
3	10	$\frac{5}{16}$	3	2	2	4	$0\frac{1}{2}$	3	$11\frac{3}{4}$	$\frac{3}{16}$
3	10	$\frac{5}{16}$	3	2	4	4	$0\frac{1}{2}$	3	$11\frac{3}{4}$	$\frac{11}{64}$
3	10	$\frac{5}{16}$	3	2	6	4	$0\frac{1}{2}$	3	$11\frac{3}{4}$	$\frac{5}{32}$
3	10	$\frac{5}{16}$	3	2	8	4	$0\frac{1}{2}$	3	$11\frac{3}{4}$	$\frac{9}{64}$
3	10	$\frac{5}{16}$	3	2	10	4	$0\frac{1}{2}$	3	$11\frac{3}{4}$	$\frac{9}{64}$
3	10	$\frac{5}{16}$	3	3	0	4	$0\frac{1}{2}$	3	$11\frac{3}{4}$	$\frac{4}{32}$
3	10	$\frac{5}{16}$	3	3	2	4	$0\frac{1}{2}$	3	$11\frac{3}{4}$	$\frac{4}{32}$
3	10	$\frac{5}{16}$	3	3	4	4	$0\frac{1}{2}$	3	$11\frac{3}{4}$	$\frac{4}{32}$
3	10	$\frac{5}{16}$	3	3	6	4	$0\frac{1}{2}$	3	$11\frac{3}{4}$	$\frac{7}{64}$
4	0	$\frac{5}{16}$	3	2	0	4	$2\frac{5}{8}$	4	$1\frac{7}{8}$	$\frac{13}{64}$
4	0	$\frac{5}{16}$	3	2	2	4	$2\frac{5}{8}$	4	$1\frac{7}{8}$	$\frac{3}{16}$
4	0	$\frac{5}{16}$	3	2	4	4	$2\frac{5}{8}$	4	$1\frac{7}{8}$	$\frac{11}{64}$
4	0	$\frac{5}{16}$	3	2	6	4	$2\frac{5}{8}$	4	$1\frac{7}{8}$	$\frac{5}{32}$
4	0	$\frac{5}{16}$	3	2	8	4	$2\frac{5}{8}$	4	$1\frac{7}{8}$	$\frac{5}{32}$
4	0	$\frac{5}{16}$	3	2	10	4	$2\frac{5}{8}$	4	$1\frac{7}{8}$	$\frac{5}{32}$
4	0	$\frac{5}{16}$	3	3	0	4	$2\frac{5}{8}$	4	$1\frac{7}{8}$	$\frac{9}{64}$
4	0	$\frac{5}{16}$	3	3	2	4	$2\frac{5}{8}$	4	$1\frac{7}{8}$	$\frac{4}{32}$
4	0	$\frac{5}{16}$	3	3	4	4	$2\frac{5}{8}$	4	$1\frac{7}{8}$	$\frac{4}{32}$
4	0	$\frac{5}{16}$	3	3	6	4	$2\frac{5}{8}$	4	$1\frac{7}{8}$	$\frac{4}{32}$

Inside diameter of Tube, Flue, or Boiler.		Thickness of Plate	Number of Plates in the Circle.	Breadth of Plate between centres of rivet holes.		Length of straight line between centres of rivet holes of Large end of Plate.		Length of straight line between centres of rivet holes of Small end of Plate.		Versed line.
FT.	IN.	Parts of an Inch.	No.	FT.	IN.	FT.	IN.	FT.	IN.	Parts of an Inch.
4	2		3	2	0	4	4 3/4	4	3 1 5/8	7/32
4	2		3	2	2	4	4 3/4	4	3 1 5/8	1/64
4	2		3	2	4	4	4 3/4	4	3 1 5/8	3/16
4	2		3	2	6	4	4 3/4	4	3 1 5/8	11/64
4	2		3	2	8	4	4 3/4	4	3 1 5/8	5/32
4	2		3	2	10	4	4 3/4	4	3 1 5/8	5/32
4	2		3	3	0	4	4 3/4	4	3 1 5/8	9/32
4	2		3	3	2	4	4 3/4	4	3 1 5/8	9/64
4	2		3	3	4	4	4 3/4	4	3 1 5/8	9/64
4	2		3	3	6	4	4 3/4	4	3 1 5/8	4/32
4	4		3	2	0	4	6 1 3/8	4	6	7/32
4	4		3	2	2	4	6 1 3/8	4	6	1/64
4	4		3	2	4	4	6 1 3/8	4	6	3/16
4	4		3	2	6	4	6 1 3/8	4	6	11/64
4	4		3	2	8	4	6 1 3/8	4	6	5/32
4	4		3	2	10	4	6 1 3/8	4	6	5/32
4	4		3	3	0	4	6 1 3/8	4	6	9/64
4	4		3	3	2	4	6 1 3/8	4	6	9/64
4	4		3	3	4	4	6 1 3/8	4	6	4/32
4	4		3	3	6	4	6 1 3/8	4	6	4/32
4	6		3	2	0	4	8 7/8	4	8 1/8	7/32
4	6		3	2	2	4	8 7/8	4	8 1/8	1/64
4	6		3	2	4	4	8 7/8	4	8 1/8	3/16
4	6		3	2	6	4	8 7/8	4	8 1/8	11/64
4	6		3	2	8	4	8 7/8	4	8 1/8	11/64
4	6		3	2	10	4	8 7/8	4	8 1/8	5/32
4	6		3	3	0	4	8 7/8	4	8 1/8	5/32
4	6		3	3	2	4	8 7/8	4	8 1/8	9/64
4	6		3	3	4	4	8 7/8	4	8 1/8	9/64
4	6		3	3	6	4	8 7/8	4	8 1/8	4/32

Inside diameter of Tube, Flue, or Boiler.		Thickness of Plate	Number of Plates in the Circle.	Breadth of Plate between centres of rivet holes.		Length of straight line between centres of rivet holes of Large end of Plate.		Length of straight line between centres of rivet holes of Small end of Plate.		Versed line.
FT.	IN.	Parts of an Inch.	No.	FT.	IN.	FT.	IN.	FT.	IN.	Parts of an Inch.
4	8		3	2	0	4	11	4	$10\frac{1}{8}$	$\frac{1}{16}\frac{5}{4}$
4	8		3	2	2	4	11	4	$10\frac{1}{8}$	$\frac{7}{32}$
4	8		3	2	4	4	11	4	$10\frac{1}{8}$	$\frac{1}{16}\frac{3}{4}$
4	8		3	2	6	4	11	4	$10\frac{1}{8}$	$\frac{3}{16}$
4	8		3	2	8	4	11	4	$10\frac{1}{8}$	$\frac{3}{16}$
4	8		3	2	10	4	11	4	$10\frac{1}{8}$	$\frac{1}{16}\frac{1}{4}$
4	8		3	3	0	4	11	4	$10\frac{1}{8}$	$\frac{5}{32}$
4	8		3	3	2	4	11	4	$10\frac{1}{8}$	$\frac{5}{32}$
4	8		3	3	4	4	11	4	$10\frac{1}{8}$	$\frac{9}{16}\frac{9}{4}$
4	8		3	3	6	4	11	4	$10\frac{1}{8}$	$\frac{9}{16}\frac{9}{4}$
4	10		3	2	0	5	$1\frac{1}{8}$	5	$0\frac{5}{16}$	$\frac{1}{4}$
4	10		3	2	2	5	$1\frac{1}{8}$	5	$0\frac{5}{16}$	$\frac{7}{32}$
4	10		3	2	4	5	$1\frac{1}{8}$	5	$0\frac{5}{16}$	$\frac{7}{32}$
4	10		3	2	6	5	$1\frac{1}{8}$	5	$0\frac{5}{16}$	$\frac{1}{16}\frac{3}{4}$
4	10		3	2	8	5	$1\frac{1}{8}$	5	$0\frac{5}{16}$	$\frac{3}{16}$
4	10		3	2	10	5	$1\frac{1}{8}$	5	$0\frac{5}{16}$	$\frac{1}{32}\frac{1}{2}$
4	10		3	3	0	5	$1\frac{1}{8}$	5	$0\frac{5}{16}$	$\frac{1}{32}\frac{1}{2}$
4	10		3	3	2	5	$1\frac{1}{8}$	5	$0\frac{5}{16}$	$\frac{5}{32}$
4	10		3	3	4	5	$1\frac{1}{8}$	5	$0\frac{5}{16}$	$\frac{9}{16}\frac{9}{4}$
4	10		3	3	6	5	$1\frac{1}{8}$	5	$0\frac{5}{16}$	$\frac{9}{16}\frac{9}{4}$
5	0		3	2	0	5	$3\frac{3}{16}$	5	$2\frac{3}{8}$	$\frac{1}{4}$
5	0		3	2	2	5	$3\frac{3}{16}$	5	$2\frac{3}{8}$	$\frac{1}{16}\frac{5}{4}$
5	0		3	2	4	5	$3\frac{3}{16}$	5	$2\frac{3}{8}$	$\frac{7}{32}$
5	0		3	2	6	5	$3\frac{3}{16}$	5	$2\frac{3}{8}$	$\frac{1}{16}\frac{3}{4}$
5	0		3	2	8	5	$3\frac{3}{16}$	5	$2\frac{3}{8}$	$\frac{3}{16}$
5	0		3	2	10	5	$3\frac{3}{16}$	5	$2\frac{3}{8}$	$\frac{1}{16}\frac{1}{4}$
5	0		3	3	0	5	$3\frac{3}{16}$	5	$2\frac{3}{8}$	$\frac{1}{16}\frac{1}{4}$
5	0		3	3	2	5	$3\frac{3}{16}$	5	$2\frac{3}{8}$	$\frac{5}{32}$
5	0		3	3	4	5	$3\frac{3}{16}$	5	$2\frac{3}{8}$	$\frac{5}{32}$
5	0		3	3	6	5	$3\frac{3}{16}$	5	$2\frac{3}{8}$	$\frac{9}{16}\frac{9}{4}$

Inside diameter of Tube, Flue, or Boiler.		Thickness of Plate	Number of Plates in the Circle.	Breadth of Plate between centres of rivet holes.		Length of straight line between centres of rivet holes of Large end of Plate.		Length of straight line between centres of rivet holes of Small end of Plate.		Versed line.
FT.	IN.	Parts of an Inch.	No.	FT.	IN.	FT.	IN.	FT.	IN.	Parts of an Inch.
5	2		3	2	0	5	5¼	5	4½	1/16 7/4
5	2		3	2	2	5	5¼	5	4½	1/4
5	2		3	2	4	5	5¼	5	4½	1/16 5/4
5	2		3	2	6	5	5¼	5	4½	3/8 7/8
5	2		3	2	8	5	5¼	5	4½	1/16 3/4
5	2		3	2	10	5	5¼	5	4½	1/8 3/8
5	2		3	3	0	5	5¼	5	4½	1/16 3/8
5	4		3	2	0	5	7⅜	5	6⅝	1/16 7/4
5	4		3	2	2	5	7⅜	5	6⅝	1/4
5	4		3	2	4	5	7⅜	5	6⅝	1/16 5/8
5	4		3	2	6	5	7⅜	5	6⅝	3/8 7/8
5	4		3	2	8	5	7⅜	5	6⅝	1/16 3/4
5	4		3	2	10	5	7⅜	5	6⅝	1/8 3/8
5	4		3	3	0	5	7⅜	5	6⅝	1/16 3/8
5	6		3	2	0	5	9½	5	8⅝	3/8 9/8
5	6		3	2	2	5	9½	5	8⅝	1/16 7/4
5	6		3	2	4	5	9½	5	8⅝	1/4
5	6		3	2	6	5	9½	5	8⅝	1/16 5/4
5	6		3	2	8	5	9½	5	8⅝	3/8 7/8
5	6		3	2	10	5	9½	5	8⅝	1/16 3/4
5	6		3	3	0	5	9½	5	8⅝	1/8 3/8
5	8		3	2	0	5	11½	5	10¾	3/8 9/8
5	8		3	2	2	5	11½	5	10¾	1/16 7/4
5	8		3	2	4	5	11½	5	10¾	1/4
5	8		3	2	6	5	11½	5	10¾	1/16 5/4
5	8		3	2	8	5	11½	5	10¾	3/8 7/8
5	8		3	2	10	5	11½	5	10¾	1/16 3/4
5	8		3	3	0	5	11½	5	10¾	1/8 3/8
5	10		3	2	0	6	1⅛	6	0⅞	1/16 9/4
5	10		3	2	2	6	1⅛	6	0⅞	3/8 9/8

Inside diameter of Tube, Flue, or Boiler.		Thickness of Plate	Number of Plates in the Circle.	Breadth of Plate between centres of rivet holes.		Length of straight line between centres of rivet holes of Large end of Plate.		Length of straight line between centres of rivet holes of Small end of Plate.		Versed line.
FT.	IN.	Parts of an Inch.	No.	FT.	IN.	FT.	IN.	FT.	IN.	Parts of an Inch.
5	10	$\frac{3}{8}$	3	2	4	6	$1\frac{3}{8}$	6	$0\frac{7}{8}$	$\frac{1}{6}\frac{7}{4}$
5	10	$\frac{3}{8}$	3	2	6	6	$1\frac{3}{8}$	6	$0\frac{7}{8}$	$\frac{1}{4}$
5	10	$\frac{3}{8}$	3	2	8	6	$1\frac{3}{8}$	6	$0\frac{7}{8}$	$\frac{1}{6}\frac{8}{4}$
5	10	$\frac{3}{8}$	3	2	10	6	$1\frac{3}{8}$	6	$0\frac{7}{8}$	$\frac{3}{3}\frac{7}{2}$
5	10	$\frac{3}{8}$	3	3	0	6	$1\frac{3}{8}$	6	$0\frac{7}{8}$	$\frac{1}{6}\frac{3}{4}$
6	0	$\frac{3}{8}$	3	2	0	6	$3\frac{3}{4}$	6	3	$\frac{1}{6}\frac{9}{4}$
6	0	$\frac{3}{8}$	3	2	2	6	$3\frac{3}{4}$	6	3	$\frac{3}{3}\frac{9}{2}$
6	0	$\frac{3}{8}$	3	2	4	6	$3\frac{3}{4}$	6	3	$\frac{1}{6}\frac{7}{4}$
6	0	$\frac{3}{8}$	3	2	6	6	$3\frac{3}{4}$	6	3	$\frac{1}{4}$
6	0	$\frac{3}{8}$	3	2	8	6	$3\frac{3}{4}$	6	3	$\frac{1}{1}\frac{8}{6}$
6	0	$\frac{3}{8}$	3	2	10	6	$3\frac{3}{4}$	6	3	$\frac{3}{3}\frac{7}{2}$
6	0	$\frac{3}{8}$	3	3	0	6	$3\frac{3}{4}$	6	3	$\frac{1}{6}\frac{3}{4}$
2	0	$\frac{7}{16}$	2	2	0	3	$2\frac{3}{8}$	3	1	$\frac{1}{6}\frac{7}{4}$
2	0	$\frac{7}{16}$	2	2	2	3	$2\frac{3}{8}$	3	1	$\frac{1}{4}$
2	0	$\frac{7}{16}$	2	2	4	3	$2\frac{3}{8}$	3	1	$\frac{1}{6}\frac{8}{4}$
2	0	$\frac{7}{16}$	2	2	6	3	$2\frac{3}{8}$	3	1	$\frac{3}{3}\frac{7}{2}$
2	0	$\frac{7}{16}$	2	2	8	3	$2\frac{3}{8}$	3	1	$\frac{1}{6}\frac{3}{4}$
2	0	$\frac{7}{16}$	2	2	10	3	$2\frac{3}{8}$	3	1	$\frac{3}{1}\frac{3}{6}$
2	0	$\frac{7}{16}$	2	3	0	3	$2\frac{3}{8}$	3	1	$\frac{1}{6}\frac{1}{4}$
2	2	$\frac{7}{16}$	2	2	0	3	$5\frac{1}{2}$	3	$4\frac{1}{8}$	$\frac{3}{3}\frac{9}{2}$
2	2	$\frac{7}{16}$	2	2	2	3	$5\frac{1}{2}$	3	$4\frac{1}{8}$	$\frac{1}{6}\frac{7}{4}$
2	2	$\frac{7}{16}$	2	2	4	3	$5\frac{1}{2}$	3	$4\frac{1}{8}$	$\frac{1}{4}$
2	2	$\frac{7}{16}$	2	2	6	3	$5\frac{1}{2}$	3	$4\frac{1}{8}$	$\frac{1}{6}\frac{8}{4}$
2	2	$\frac{7}{16}$	2	2	8	3	$5\frac{1}{2}$	3	$4\frac{1}{8}$	$\frac{3}{3}\frac{7}{2}$
2	2	$\frac{7}{16}$	2	2	10	3	$5\frac{1}{2}$	3	$4\frac{1}{8}$	$\frac{1}{6}\frac{3}{4}$
2	2	$\frac{7}{16}$	2	3	0	3	$5\frac{1}{2}$	3	$4\frac{1}{8}$	$\frac{3}{1}\frac{3}{6}$
2	4	$\frac{7}{16}$	2	2	0	3	$8\frac{5}{8}$	3	$7\frac{1}{4}$	$\frac{1}{1}\frac{9}{6}$
2	4	$\frac{7}{16}$	2	2	2	3	$8\frac{5}{8}$	3	$7\frac{1}{4}$	$\frac{1}{6}\frac{9}{4}$
2	4	$\frac{7}{16}$	2	2	4	3	$8\frac{5}{8}$	3	$7\frac{1}{4}$	$\frac{3}{3}\frac{9}{2}$
2	4	$\frac{7}{16}$	2	2	6	3	$8\frac{5}{8}$	3	$7\frac{1}{4}$	$\frac{1}{6}\frac{7}{4}$

Inside diameter of Tube, Flue, or Boiler.		Thickness of Plate	Number of Plates in the Circle.	Breadth of Plate between centres of rivet holes.		Length of straight line between centres of rivet holes of Large end of Plate.		Length of straight line between centres of rivet holes of Small end of Plate.		Versed line.
FT.	IN.	Parts of an Inch.	No.	FT.	IN.	FT.	IN.	FT.	IN.	Parts of an Inch.
2	4	$\frac{7}{16}$	2	2	8	3	$8\frac{5}{8}$	3	$7\frac{1}{4}$	$\frac{1}{4}$
2	4	$\frac{7}{16}$	2	2	10	3	$8\frac{5}{8}$	3	$7\frac{1}{4}$	$\frac{1}{16}\frac{5}{4}$
2	4	$\frac{7}{16}$	2	3	0	3	$8\frac{5}{8}$	3	$7\frac{1}{4}$	$\frac{3}{32}$
2	6	$\frac{7}{16}$	2	2	0	3	$11\frac{3}{4}$	3	$10\frac{3}{8}$	$\frac{5}{16}$
2	6	$\frac{7}{16}$	2	2	2	3	$11\frac{3}{4}$	3	$10\frac{3}{8}$	$\frac{1}{16}\frac{9}{4}$
2	6	$\frac{7}{16}$	2	2	4	3	$11\frac{3}{4}$	3	$10\frac{3}{8}$	$\frac{9}{32}$
2	6	$\frac{7}{16}$	2	2	6	3	$11\frac{3}{4}$	3	$10\frac{3}{8}$	$\frac{1}{16}\frac{7}{4}$
2	6	$\frac{7}{16}$	2	2	8	3	$11\frac{3}{4}$	3	$10\frac{3}{8}$	$\frac{1}{4}$
2	6	$\frac{7}{16}$	2	2	10	3	$11\frac{3}{4}$	3	$10\frac{3}{8}$	$\frac{1}{16}\frac{5}{4}$
2	6	$\frac{7}{16}$	2	3	0	3	$11\frac{3}{4}$	3	$10\frac{3}{8}$	$\frac{3}{32}$
2	8	$\frac{7}{16}$	2	2	0	4	$2\frac{7}{8}$	4	$1\frac{1}{2}$	$\frac{1}{32}$
2	8	$\frac{7}{16}$	2	2	2	4	$2\frac{7}{8}$	4	$1\frac{1}{2}$	$\frac{3}{16}\frac{1}{4}$
2	8	$\frac{7}{16}$	2	2	4	4	$2\frac{7}{8}$	4	$1\frac{1}{2}$	$\frac{5}{16}$
2	8	$\frac{7}{16}$	2	2	6	4	$2\frac{7}{8}$	4	$1\frac{1}{2}$	$\frac{1}{16}\frac{9}{4}$
2	8	$\frac{7}{16}$	2	2	8	4	$2\frac{7}{8}$	4	$1\frac{1}{2}$	$\frac{9}{32}$
2	8	$\frac{7}{16}$	2	2	10	4	$2\frac{7}{8}$	4	$1\frac{1}{2}$	$\frac{1}{16}\frac{7}{4}$
2	8	$\frac{7}{16}$	2	3	0	4	$2\frac{7}{8}$	4	$1\frac{1}{2}$	$\frac{1}{4}$
2	10	$\frac{7}{16}$	2	2	0	4	6	4	$4\frac{5}{8}$	$\frac{3}{16}\frac{3}{4}$
2	10	$\frac{7}{16}$	2	2	2	4	6	4	$4\frac{5}{8}$	$\frac{1}{32}$
2	10	$\frac{7}{16}$	2	2	4	4	6	4	$4\frac{5}{8}$	$\frac{3}{16}\frac{1}{4}$
2	10	$\frac{7}{16}$	2	2	6	4	6	4	$4\frac{5}{8}$	$\frac{5}{16}$
2	10	$\frac{7}{16}$	2	2	8	4	6	4	$4\frac{5}{8}$	$\frac{1}{16}\frac{9}{4}$
2	10	$\frac{7}{16}$	2	2	10	4	6	4	$4\frac{5}{8}$	$\frac{9}{32}$
2	10	$\frac{7}{16}$	2	3	0	4	6	4	$4\frac{5}{8}$	$\frac{1}{32}\frac{7}{4}$
3	0	$\frac{7}{16}$	2	2	0	4	$9\frac{1}{8}$	4	$7\frac{3}{4}$	$\frac{1}{32}$
3	0	$\frac{7}{16}$	2	2	2	4	$9\frac{1}{8}$	4	$7\frac{3}{4}$	$\frac{3}{8}$
3	0	$\frac{7}{16}$	2	2	4	4	$9\frac{1}{8}$	4	$7\frac{3}{4}$	$\frac{1}{32}$
3	0	$\frac{7}{16}$	2	2	6	4	$9\frac{1}{8}$	4	$7\frac{3}{4}$	$\frac{3}{16}\frac{1}{4}$
3	0	$\frac{7}{16}$	2	2	8	4	$9\frac{1}{8}$	4	$7\frac{3}{4}$	$\frac{5}{16}$
3	0	$\frac{7}{16}$	2	2	10	4	$9\frac{1}{8}$	4	$7\frac{3}{4}$	$\frac{1}{16}\frac{9}{4}$

Inside diameter of Tube, Flue, or Boiler.		Thickness of Plate	Number of Plates in the Circle.	Breadth of Plate between centres of rivet holes.		Length of straight line between centres of rivet holes of Large end of Plate.		Length of straight line between centres of rivet holes of Small end of Plate.		Versed line.
FT.	IN.	Parts of an Inch.	No.	FT.	IN.	FT.	IN.	FT.	IN.	Parts of an Inch.
3	0	$\frac{7}{16}$	2	3	0	4	$9\frac{1}{8}$	4	$7\frac{3}{4}$	$\frac{9}{32}$
3	2	$\frac{7}{16}$	2	2	0	5	$0\frac{1}{4}$	4	$10\frac{7}{8}$	$\frac{7}{32}$
3	2	$\frac{7}{16}$	2	2	2	5	$0\frac{1}{4}$	4	$10\frac{7}{8}$	$\frac{3}{32}$
3	2	$\frac{7}{16}$	2	2	4	5	$0\frac{1}{4}$	4	$10\frac{7}{8}$	$\frac{3}{32}$
3	2	$\frac{7}{16}$	2	2	6	5	$0\frac{1}{4}$	4	$10\frac{7}{8}$	$\frac{1}{32}$
3	2	$\frac{7}{16}$	2	2	8	5	$0\frac{1}{4}$	4	$10\frac{7}{8}$	$\frac{1}{32}$
3	2	$\frac{7}{16}$	2	2	10	5	$0\frac{1}{4}$	4	$10\frac{7}{8}$	$\frac{5}{16}$
3	2	$\frac{7}{16}$	2	3	0	5	$0\frac{1}{4}$	4	$10\frac{7}{8}$	$\frac{9}{64}$
3	4	$\frac{7}{16}$	2	2	0	5	$3\frac{3}{32}$	5	2	$\frac{9}{64}$
3	4	$\frac{7}{16}$	2	2	2	5	$3\frac{3}{32}$	5	2	$\frac{7}{64}$
3	4	$\frac{7}{16}$	2	2	4	5	$3\frac{3}{32}$	5	2	$\frac{3}{32}$
3	4	$\frac{7}{16}$	2	2	6	5	$3\frac{3}{32}$	5	2	$\frac{3}{32}$
3	4	$\frac{7}{16}$	2	2	8	5	$3\frac{3}{32}$	5	2	$\frac{1}{32}$
3	4	$\frac{7}{16}$	2	2	10	5	$3\frac{3}{32}$	5	2	$\frac{5}{16}$
3	4	$\frac{7}{16}$	2	3	0	5	$3\frac{3}{32}$	5	2	$\frac{9}{64}$
3	6	$\frac{7}{16}$	2	2	0	5	$6\frac{1}{2}$	5	$5\frac{1}{8}$	$\frac{5}{32}$
3	6	$\frac{7}{16}$	2	2	2	5	$6\frac{1}{2}$	5	$5\frac{1}{8}$	$\frac{9}{64}$
3	6	$\frac{7}{16}$	2	2	4	5	$6\frac{1}{2}$	5	$5\frac{1}{8}$	$\frac{7}{64}$
3	6	$\frac{7}{16}$	2	2	6	5	$6\frac{1}{2}$	5	$5\frac{1}{8}$	$\frac{3}{32}$
3	6	$\frac{7}{16}$	2	2	8	5	$6\frac{1}{2}$	5	$5\frac{1}{8}$	$\frac{3}{32}$
3	6	$\frac{7}{16}$	2	2	10	5	$6\frac{1}{2}$	5	$5\frac{1}{8}$	$\frac{3}{64}$
3	6	$\frac{7}{16}$	2	3	0	5	$6\frac{1}{2}$	5	$5\frac{1}{8}$	$\frac{1}{64}$
3	8	$\frac{7}{16}$	2	2	0	5	$9\frac{5}{32}$	5	$8\frac{1}{4}$	$\frac{1}{64}$
3	8	$\frac{7}{16}$	2	2	2	5	$9\frac{5}{32}$	5	$8\frac{1}{4}$	$\frac{5}{32}$
3	8	$\frac{7}{16}$	2	2	4	5	$9\frac{5}{32}$	5	$8\frac{1}{4}$	$\frac{7}{16}$
3	8	$\frac{7}{16}$	2	2	6	5	$9\frac{5}{32}$	5	$8\frac{1}{4}$	$\frac{7}{64}$
3	8	$\frac{7}{16}$	2	2	8	5	$9\frac{5}{32}$	5	$8\frac{1}{4}$	$\frac{3}{32}$
3	8	$\frac{7}{16}$	2	2	10	5	$9\frac{5}{32}$	5	$8\frac{1}{4}$	$\frac{3}{32}$
3	8	$\frac{7}{16}$	2	3	0	5	$9\frac{5}{32}$	5	$8\frac{1}{4}$	$\frac{1}{32}$
3	10	$\frac{7}{16}$	2	2	0	6	$0\frac{3}{4}$	5	$11\frac{3}{8}$	$\frac{3}{64}$

Inside diameter of Tube, Flue, or Boiler.		Thickness of Plate	Number of Plates in the Circle.	Breadth of Plate between centres of rivet holes.		Length of straight line between centres of rivet holes of Large end of Plate.		Length of straight line between centres of rivet holes of Small end of Plate.		Versed line.
FT.	IN.	Parts of an Inch.	No.	FT.	IN.	FT.	IN.	FT.	IN.	Parts of an Inch.
3	10	$\frac{7}{16}$	2	2	2	6	$0\frac{3}{4}$	5	$11\frac{3}{8}$	$\frac{3}{8}\ \frac{1}{4}$
3	10	$\frac{7}{16}$	2	2	4	6	$0\frac{3}{4}$	5	$11\frac{3}{8}$	$\frac{1}{8}\ \frac{5}{8}$
3	10	$\frac{7}{16}$	2	2	6	6	$0\frac{3}{4}$	5	$11\frac{3}{8}$	$\frac{7}{16}$
3	10	$\frac{7}{16}$	2	2	8	6	$0\frac{3}{4}$	5	$11\frac{3}{8}$	$\frac{3}{8}\ \frac{7}{4}$
3	10	$\frac{7}{16}$	2	2	10	6	$0\frac{3}{4}$	5	$11\frac{3}{8}$	$\frac{3}{8}\ \frac{5}{4}$
3	10	$\frac{7}{16}$	2	3	0	6	$0\frac{3}{4}$	5	$11\frac{3}{8}$	$\frac{3}{8}$
4	0	$\frac{7}{16}$	2	2	0	7	$3\frac{7}{8}$	7	$2\frac{1}{2}$	$\frac{1}{8}\ \frac{7}{8}$
4	0	$\frac{7}{16}$	2	2	2	7	$3\frac{7}{8}$	7	$2\frac{1}{2}$	$\frac{1}{2}$
4	0	$\frac{7}{16}$	2	2	4	7	$3\frac{7}{8}$	7	$2\frac{1}{2}$	$\frac{1}{8}\ \frac{5}{8}$
4	0	$\frac{7}{16}$	2	2	6	7	$3\frac{7}{8}$	7	$2\frac{1}{2}$	$\frac{3}{8}\ \frac{3}{4}$
4	0	$\frac{7}{16}$	2	2	8	7	$3\frac{7}{8}$	7	$2\frac{1}{2}$	$\frac{7}{16}$
4	0	$\frac{7}{16}$	2	2	10	7	$3\frac{7}{8}$	7	$2\frac{1}{2}$	$\frac{3}{8}\ \frac{5}{4}$
4	0	$\frac{7}{16}$	2	3	0	7	$3\frac{7}{8}$	7	$2\frac{1}{2}$	$\frac{3}{8}$
3	0	$\frac{7}{16}$	3	2	0	3	$2\frac{1}{8}$	3	$1\frac{1}{8}$	$\frac{1}{8}\ \frac{1}{4}$
3	0	$\frac{7}{16}$	3	2	2	3	$2\frac{1}{8}$	3	$1\frac{1}{8}$	$\frac{5}{8}\ \frac{5}{8}$
3	0	$\frac{7}{16}$	3	2	4	3	$2\frac{1}{8}$	3	$1\frac{1}{8}$	$\frac{5}{8}\ \frac{5}{8}$
3	0	$\frac{7}{16}$	3	2	6	3	$2\frac{1}{8}$	3	$1\frac{1}{8}$	$\frac{9}{0}\ \frac{9}{4}$
3	0	$\frac{7}{16}$	3	2	8	3	$2\frac{1}{8}$	3	$1\frac{1}{8}$	$\frac{9}{0}\ \frac{9}{4}$
3	0	$\frac{7}{16}$	3	2	10	3	$2\frac{1}{8}$	3	$1\frac{1}{8}$	$\frac{1}{8}$
3	0	$\frac{7}{16}$	3	3	0	3	$2\frac{1}{8}$	3	$1\frac{1}{8}$	$\frac{1}{8}$
3	2	$\frac{7}{16}$	3	2	0	3	$4\frac{1}{8}$	3	$3\frac{1}{8}$	$\frac{3}{16}$
3	2	$\frac{7}{16}$	3	2	2	3	$4\frac{1}{8}$	3	$3\frac{1}{8}$	$\frac{3}{16}$
3	2	$\frac{7}{16}$	3	2	4	3	$4\frac{1}{8}$	3	$3\frac{1}{8}$	$\frac{1}{0}\ \frac{1}{4}$
3	2	$\frac{7}{16}$	3	2	6	3	$4\frac{1}{8}$	3	$3\frac{1}{8}$	$\frac{5}{8}\ \frac{5}{8}$
3	2	$\frac{7}{16}$	3	2	8	3	$4\frac{1}{8}$	3	$3\frac{1}{8}$	$\frac{5}{8}\ \frac{5}{8}$
3	2	$\frac{7}{16}$	3	2	10	3	$4\frac{1}{8}$	3	$3\frac{1}{8}$	$\frac{9}{0}\ \frac{9}{4}$
3	2	$\frac{7}{16}$	3	3	0	3	$4\frac{1}{8}$	3	$3\frac{1}{8}$	$\frac{1}{8}$
3	4	$\frac{7}{16}$	3	2	0	3	$6\frac{1}{4}$	3	$5\frac{3}{8}$	$\frac{1}{0}\ \frac{3}{4}$
3	4	$\frac{7}{16}$	3	2	2	3	$6\frac{1}{4}$	3	$5\frac{3}{8}$	$\frac{3}{16}$
3	4	$\frac{7}{16}$	3	2	4	3	$6\frac{1}{4}$	3	$5\frac{3}{8}$	$\frac{1}{0}\ \frac{1}{4}$

Inside diameter of Tube, Flue, or Boiler.		Thickness of Plate	Number of Plates in the Circle.	Breadth of Plate between centres of rivet holes.		Length of straight line between centres of rivet holes of Large end of Plate.		Length of straight line between centres of rivet holes of Small end of Plate.		Versed line.
FT.	IN.	Parts of an Inch.	No.	FT.	IN.	FT.	IN.	FT.	IN.	Parts of an Inch.
3	4	$\frac{7}{16}$	3	2	6	3	$6\frac{1}{4}$	3	$5\frac{3}{8}$	$\frac{1}{6}\frac{1}{4}$
3	4	$\frac{7}{16}$	3	2	8	3	$6\frac{1}{4}$	3	$5\frac{3}{8}$	$\frac{3}{8}\frac{5}{2}$
3	4	$\frac{7}{16}$	3	2	10	3	$6\frac{1}{4}$	3	$5\frac{3}{8}$	$\frac{3}{8}\frac{5}{2}$
3	4	$\frac{7}{16}$	3	3	0	3	$6\frac{1}{4}$	3	$5\frac{3}{8}$	$\frac{9}{6}\frac{9}{4}$
3	6	$\frac{7}{16}$	3	2	0	3	$8\frac{3}{8}$	3	$7\frac{1}{2}$	$\frac{1}{6}\frac{3}{4}$
3	6	$\frac{7}{16}$	3	2	2	3	$8\frac{3}{8}$	3	$7\frac{1}{2}$	$\frac{3}{1}\frac{3}{6}$
3	6	$\frac{7}{16}$	3	2	4	3	$8\frac{3}{8}$	3	$7\frac{1}{2}$	$\frac{1}{6}\frac{1}{4}$
3	6	$\frac{7}{16}$	3	2	6	3	$8\frac{3}{8}$	3	$7\frac{1}{2}$	$\frac{1}{6}\frac{1}{4}$
3	6	$\frac{7}{16}$	3	2	8	3	$8\frac{3}{8}$	3	$7\frac{1}{2}$	$\frac{3}{8}\frac{5}{2}$
3	6	$\frac{7}{16}$	3	2	10	3	$8\frac{3}{8}$	3	$7\frac{1}{2}$	$\frac{3}{8}\frac{5}{2}$
3	6	$\frac{7}{16}$	3	3	0	3	$8\frac{3}{8}$	3	$7\frac{1}{2}$	$\frac{9}{6}\frac{9}{4}$
3	8	$\frac{7}{16}$	3	2	0	3	$10\frac{1}{2}$	3	$9\frac{1}{2}$	$\frac{7}{3}\frac{7}{2}$
3	8	$\frac{7}{16}$	3	2	2	3	$10\frac{1}{2}$	3	$9\frac{1}{2}$	$\frac{1}{6}\frac{3}{4}$
3	8	$\frac{7}{16}$	3	2	4	3	$10\frac{1}{2}$	3	$9\frac{1}{2}$	$\frac{1}{6}\frac{3}{4}$
3	8	$\frac{7}{16}$	3	2	6	3	$10\frac{1}{2}$	3	$9\frac{1}{2}$	$\frac{3}{1}\frac{3}{6}$
3	8	$\frac{7}{16}$	3	2	8	3	$10\frac{1}{2}$	3	$9\frac{1}{2}$	$\frac{1}{6}\frac{1}{4}$
3	8	$\frac{7}{16}$	3	2	10	3	$10\frac{1}{2}$	3	$9\frac{1}{2}$	$\frac{1}{6}\frac{1}{4}$
3	8	$\frac{7}{16}$	3	3	0	3	$10\frac{1}{2}$	3	$9\frac{1}{2}$	$\frac{3}{8}\frac{5}{2}$
3	10	$\frac{7}{16}$	3	2	0	4	$0\frac{1}{2}$	3	$11\frac{5}{8}$	$\frac{1}{6}\frac{5}{4}$
3	10	$\frac{7}{16}$	3	2	2	4	$0\frac{1}{2}$	3	$11\frac{5}{8}$	$\frac{3}{8}\frac{7}{2}$
3	10	$\frac{7}{16}$	3	2	4	4	$0\frac{1}{2}$	3	$11\frac{5}{8}$	$\frac{1}{6}\frac{3}{4}$
3	10	$\frac{7}{16}$	3	2	6	4	$0\frac{1}{2}$	3	$11\frac{5}{8}$	$\frac{1}{6}\frac{3}{4}$
3	10	$\frac{7}{16}$	3	2	8	4	$0\frac{1}{2}$	3	$11\frac{5}{8}$	$\frac{3}{1}\frac{3}{6}$
3	10	$\frac{7}{16}$	3	2	10	4	$0\frac{1}{2}$	3	$11\frac{5}{8}$	$\frac{1}{6}\frac{1}{4}$
3	10	$\frac{7}{16}$	3	3	0	4	$0\frac{1}{2}$	3	$11\frac{5}{8}$	$\frac{1}{6}\frac{1}{4}$
4	0	$\frac{7}{16}$	3	2	0	4	$2\frac{5}{8}$	4	$1\frac{3}{4}$	$\frac{1}{6}\frac{5}{4}$
4	0	$\frac{7}{16}$	3	2	2	4	$2\frac{5}{8}$	4	$1\frac{3}{4}$	$\frac{1}{6}\frac{5}{4}$
4	0	$\frac{7}{16}$	3	2	4	4	$2\frac{5}{8}$	4	$1\frac{3}{4}$	$\frac{3}{8}\frac{7}{2}$
4	0	$\frac{7}{16}$	3	2	6	4	$2\frac{5}{8}$	4	$1\frac{3}{4}$	$\frac{1}{6}\frac{3}{4}$
4	0	$\frac{7}{16}$	3	2	8	4	$2\frac{5}{8}$	4	$1\frac{3}{4}$	$\frac{1}{6}\frac{3}{4}$

Inside diameter of Tube, Flue, or Boiler.		Thickness of Plate	Number of Plates in the Circle.	Breadth of Plate between centres of rivet holes.		Length of straight line between centres of rivet holes of Large end of Plate.		Length of straight line between centres of rivet holes of Small end of Plate.		Versed line.
FT.	IN.	Parts of an Inch.	No.	FT.	IN.	FT.	IN.	FT.	IN.	Parts of an Inch.
4	0	$\frac{7}{16}$	3	2	10	4	$2\frac{5}{8}$	4	$1\frac{3}{4}$	$\frac{3}{16}$
4	0	$\frac{7}{16}$	3	3	0	4	$2\frac{5}{8}$	4	$1\frac{3}{4}$	$\frac{1}{16}\frac{1}{4}$
4	2	$\frac{7}{16}$	3	2	0	4	$4\frac{3}{4}$	4	$3\frac{7}{8}$	$\frac{1}{4}$
4	2	$\frac{7}{16}$	3	2	2	4	$4\frac{3}{4}$	4	$3\frac{7}{8}$	$\frac{1}{16}\frac{5}{4}$
4	2	$\frac{7}{16}$	3	2	4	4	$4\frac{3}{4}$	4	$3\frac{7}{8}$	$\frac{7}{32}$
4	2	$\frac{7}{16}$	3	2	6	4	$4\frac{3}{4}$	4	$3\frac{7}{8}$	$\frac{1}{16}\frac{3}{4}$
4	2	$\frac{7}{16}$	3	2	8	4	$4\frac{3}{4}$	4	$3\frac{7}{8}$	$\frac{3}{16}$
4	2	$\frac{7}{16}$	3	2	10	4	$4\frac{3}{4}$	4	$3\frac{7}{8}$	$\frac{1}{16}\frac{1}{4}$
4	2	$\frac{7}{16}$	3	3	0	4	$4\frac{3}{4}$	4	$3\frac{7}{8}$	$\frac{1}{16}\frac{1}{4}$
4	4	$\frac{7}{16}$	3	2	0	4	$6\frac{7}{8}$	4	$5\frac{7}{8}$	$\frac{1}{4}$
4	4	$\frac{7}{16}$	3	2	2	4	$6\frac{7}{8}$	4	$5\frac{7}{8}$	$\frac{1}{16}\frac{5}{4}$
4	4	$\frac{7}{16}$	3	2	4	4	$6\frac{7}{8}$	4	$5\frac{7}{8}$	$\frac{7}{32}$
4	4	$\frac{7}{16}$	3	2	6	4	$6\frac{7}{8}$	4	$5\frac{7}{8}$	$\frac{1}{16}\frac{3}{4}$
4	4	$\frac{7}{16}$	3	2	8	4	$6\frac{7}{8}$	4	$5\frac{7}{8}$	$\frac{1}{16}\frac{3}{4}$
4	4	$\frac{7}{16}$	3	2	10	4	$6\frac{7}{8}$	4	$5\frac{7}{8}$	$\frac{3}{16}$
4	4	$\frac{7}{16}$	3	3	0	4	$6\frac{7}{8}$	4	$5\frac{7}{8}$	$\frac{1}{16}\frac{1}{4}$
4	6	$\frac{7}{16}$	3	2	0	4	9	4	8	$\frac{1}{16}\frac{7}{4}$
4	6	$\frac{7}{16}$	3	2	2	4	9	4	8	$\frac{1}{4}$
4	6	$\frac{7}{16}$	3	2	4	4	9	4	8	$\frac{1}{16}\frac{5}{4}$
4	6	$\frac{7}{16}$	3	2	6	4	9	4	8	$\frac{1}{16}\frac{3}{4}$
4	6	$\frac{7}{16}$	3	2	8	4	9	4	8	$\frac{1}{16}\frac{3}{4}$
4	6	$\frac{7}{16}$	3	2	10	4	9	4	8	$\frac{3}{16}$
4	6	$\frac{7}{16}$	3	3	0	4	9	4	8	$\frac{1}{16}\frac{1}{4}$
4	8	$\frac{7}{16}$	3	2	0	4	11	4	10	$\frac{9}{32}$
4	8	$\frac{7}{16}$	3	2	2	4	11	4	10	$\frac{1}{16}\frac{7}{4}$
4	8	$\frac{7}{16}$	3	2	4	4	11	4	10	$\frac{1}{4}$
4	8	$\frac{7}{16}$	3	2	6	4	11	4	10	$\frac{1}{16}\frac{5}{4}$
4	8	$\frac{7}{16}$	3	2	8	4	11	4	10	$\frac{7}{32}$
4	8	$\frac{7}{16}$	3	2	10	4	11	4	10	$\frac{1}{16}\frac{3}{4}$
4	8	$\frac{7}{16}$	3	3	0	4	11	4	10	$\frac{3}{16}$

In the first place draw a straight line as A B, figure 1, and bisect A B at E, and erect a perpendicular line E C, then with the radius of 1 foot 11⅛ inches, describe the semicircle; divide the arc *a b c d e* into a number of equal parts, and through the points of division *a b c d e*, draw lines parallel to A B until they meet at perpendicular E C—this part of the operation is now complete.

The semicircle A B, figure 2, is the greatest breadth of template between centres of rivet holes; bisect the line A B at C, by a perpendicular, divide the arc A D into the same number of equal parts as taken in the arc *a b c d e*, figure 1, and draw lines parallel to A B; having done this, take the sheet iron plate for template, and draw a straight line as A B, and bisect it with a perpendicular, then set off on E F, equal distances, as *a b c d e*, figure 1, and make the breadths at each point same as AB, 2 2, 3 3, 4 4, 5 5, figure 2, drawing the lines parallel to A B; then bend a thin lath round the points, and through them trace the curve lines of both sides of the template; set the trammel points to 3 feet 1⅜ inches for radius, and fix one of its points at the points A and B, the other on the perpendicular line for a centre, then describe the arc line for rivet holes; having done this shift the sliding point of trammel until it meets at the points 5 5, keeping the same centre as before, describe the arc line for rivet holes and add the required lap round the template and it will be the shape required.

To find the template for a given long Egg-end PARABOLA; *the breadth and length of the template at any particular place.*

Let *a b c d e f*, figure 1, represent the Parabola, the plates to be either over-lap or jump jointed, the breadth of each plate to be a given portion of the whole circumference, say ⅛ part.

The breadth of the template at each place to be found by calculation, as follows.

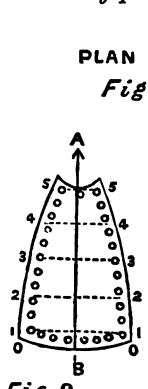


Fig 2.

PLAN
Fig 3.

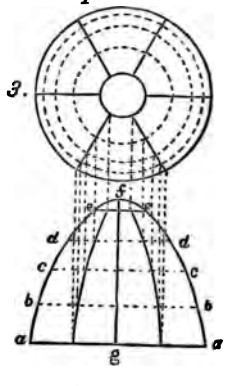


Fig 1.

Diameter of *a a*=8 feet 6 inches; circumference of *a a*=10 feet 11⅞ inches ÷ 6=1 foot 9⅛ inches=breadth of template at points 1 1, figure 2.

Diameter of *b b*=8 feet 2 inches; circumference of *b b*=9 feet 11⅜ in. ÷ 6=1 foot 7⅞ inches=breadth of template at points 2 2.

Diameter of *c c*=2 feet 8 inches; circumference of *c c*=8 feet 4½ in. ÷ 6=1 foot 4¾ inches=breadth of template at points 3 3.

Diameter of *d d*=1 foot 11 inches; circumference of *d d*=6 feet ½ inch ÷ 6=1 foot=breadth of template at points 4 4.

Diameter of *e e*,=1 foot; circumference of *e e*=3 feet 1⅛ inches ÷ 6=6¼ inches=breadth of template at points 5 5.

NOTE—The points are the centres of the rivet holes for over-lap joints

Now take the sheet iron plate intended for the template, and draw upon it a straight line, as 1 1, and bisect it by a perpendicular A B, and set off on A B, equal distances as 1, 2, 3, 4, 5, same as on the *parabola*, *a b c d e*, figure 1; make the breadth at each point same as found by calculation, then by bending a thin lath round the points and tracing a line through them, will give the shape of the template required.

The radius for describing the arc line of template for rivet holes will be found by the following rule—

RULE—To the square of the ordinate (*a g*), add ⅛ of the square of the abscissa (*g f*), and the square root of the product will be the length of half the arc, (*a f a*), and the same length will be the radius required.

EXAMPLE.

inches.		inches.
21	ordinate *a g*.	36=abscissa *g f*.
21		36
21		216
42		108
441	square of ordinate *a g*	1296=square of [abscissa *g f*
1728		4
2169	(46·5 inches=8 feet	8) 5184
16	10½ inches for radius.	
86) 569		1728=product of ⅛.
516		
925) 5300		
4625		

Now, having obtained the radius, set the trammel points to 8 feet 10½ inches, and place one of its points to line 1 1, and the other on the perpendicular A for a centre, then describe the arc line for rivet holes; having done this, contract the sliding point of trammel until it meets at line 5 5, then mark the arc line for rivet holes and place the lap round the template if required, and it will be complete as to its figure.

To find the Templates for a given Barrel SPHEROID; *the breadths and lengths at any particular place, by calculation.*

FIG. 3.

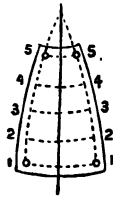


FIG. 1.

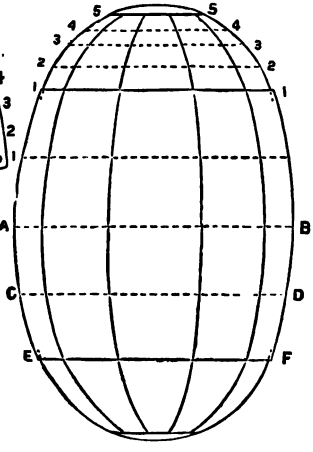
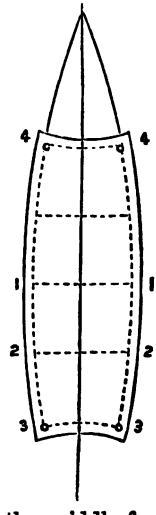


FIG. 2.



Let A B C D E F, figure 1, be one half of the middle frustum of the barrel; the plates for forming the same are to be over-lap jointed, and the breadth of each plate is to bear an equal portion of the whole circumference of each place, say $\frac{1}{10}$ part.

Thus, the diameter of A B to measure 7 feet 6 inches, the diameter of C D to measure 7 feet 2 inches, the diameter of E F to measure 6 feet 5 inches; then the circumference of A B will equal 23 feet 6¾ inches, which, divided by 10, gives for breadth of template at 1 1, (figure 2) 2 feet 4¼ inches, at that point, between centres of rivet holes.

The circumference of C D will equal 22 feet 6 inches, divided by 10, gives for breadth of template at 2 2, 2 feet 3 inches at that point, between centres of rivet holes.

The circumference of E F will equal 20 feet $1\frac{7}{8}$ inches, divided by 10, gives 2 feet $0\frac{3}{16}$ inch for breadth of template at the point 3 3, between centres of rivet holes.

The other half of the frustum will measure the same dimentions as the above calculations.

The length of the arc and the versed sine may be found as follows—

Suppose the cord line to measure 88 inches, this divided by 2 gives 44 inches, and the square of 44 inches equals 1936 inches.

Find the versed sine by taking the difference between the two diameters A B and E F, figure 1, and divide the remainder by 2:

Thus—A B=7 feet 6 inches.
E F=6 ,, 5 ,,

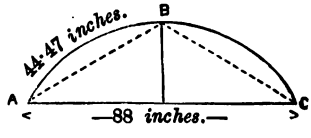
2) 1 1

0 $6\frac{1}{2}$ inches=versed sine.

Then square the versed sine and add the product to the square of $\frac{1}{2}$ the cord, and from their united sum take the square root, which gives the length of cord of half the arc A B, figure 4.

EXAMPLES.

FIG. 4.



44
44
176
176
1936=square $\frac{1}{2}$ of cord
42·25
1978·25 (44·47=square root.
16
84) 378
336
884) 4225
3536
8887) 68900
62209

6·5
6·5
325
390
42·25 square of versed sine.

Now if we take the square root and multiply it by 8, and from the product subtract the whole cord line, and divide the remainder by 3, we shall have the length of the arc nearly.

44·47
8
355·76
88
3) 267·76
89·25=89¼ inches.

Consequently the length of the template, figure 2, between centres of the rivet holes 8 and 4, will be 7 feet 5¼ inches

Having completed the dimensions of template for middle frustum we proceed to find the template for the spherical or Egg ends of the barrel.

Thus, the diameter of 1 1, figure 1, will equal 6 feet 4⅛ inches; the diameter of 2, 2, will equal 5 feet 4⅛ inches; the diameter of 3 3, will equal 4 feet 9⅛ inches; the diameter of 4 4, will equal 3 feet 7⅛ inches; the diameter of 5 5, will equal 2 feet 2⅛ inches.

Then the circumference of 1 1, equals 19 feet 11⅛ inches ÷ 10 gives for breadth of template at 1 1, figure 3, 1 foot 11⅛⅛ inches at that point, centre to centre of rivet holes.

The circumference of 2 2, equals 17 feet 10 inches, ÷ 10 gives for breadth of template at 2 2, figure 3, 1 foot 9⅜ inches at that point, centre to centre of rivet holes.

The circumference of 3 3, equals 14 feet 11⅛ inches, ÷ 10 gives breadth of template at 3 3, figure 3, 1 foot 5⅛⅛ inches at that point, centre to centre of rivet holes.

The circumference of 4 4, equals 11 feet 3⅛ inches, ÷ 10 gives breadth of template at 4 4, figure 3, 1 foot 1⅛ inch at that point, centre to centre of rivet holes.

The circumference of 5 5, equals 6 feet 10 inches, ÷ 10 gives breadth of template at 5 5, figure 3, $8\frac{3}{16}$ inches at that point, centre to centre of rivet holes.

N.B.—To mark out the template, follow the instructions laid down for the dome, figure 2, page 178, and the template will be the shape required.

THE BOILER-MAKERS'

AND

IRON SHIP-BUILDERS' COMPANION

SECTION VI.

Approximate Rules for finding the Weight of different figures of Wrought Iron and Steel.

RULE 1: *For Round Iron*—Multiply the square of the diameter in inches, by the length in feet, and by 2·63, and the product will be the weight in pounds avoirdupois, *nearly*.

RULE 2: *For Square Iron*—Multiply the area of the end of the bar in inches, by the length in feet, and by 3·36; the product will be the weight in pounds avoirdupois, *nearly*.

RULE 3: *For Square, Angled, T, Convex, or any figure of Beam Iron*—Ascertain the area of the end of each figure of bar, in inches, then multiply the area by the length in feet, and that product by 10, and divide by three; the remainder will be the weight in pounds avoirdupois, *nearly*.

RULE 4: *For Square Cast Steel*—Multiply the area of the end of the bar in inches, by the length in feet, and that product by 3·4; the product will be the weight in pounds avoirdupois *nearly*.

RULE 5: *For Round Cast Steel*—Multiply the square of the diameter in inches, by the length in feet, and that product by 2·67; the product will give the weight in pounds avoirdupois, *nearly*.

Examples.

What is the weight of a round bar of wrought iron, 6 feet long and 2 inches diameter ?

2 inches diameter.
2

4 square of diameter.
6 feet, the length.

24·
2·63 multiplier.

72
144
48

63·12=2 qrs. 7 lbs.—*Ans.*

What is the weight of a square bar of wrought iron 6 feet long and 2½ inches on side of square ?

2·5=2½ inches, side of
2·5 square.

125
50

6·25=area of end of bar.
6 feet, the length.

37·50
3·36 multiplier.

22500
11250
11250

126·0000=*Ans.* 126 lbs.

The area of the end of a bar of square angled iron equals 3 square inches; what is the weight of 6 feet in length ?

3 square inches=area.
6 feet, the length.

18
10

3 | 180

60 lbs.=*Ans.*

The area of the end of a bar of convex (or half round iron) is equal to 2¾ square inches; what is the weight of 12 feet ?

2·75 square inches=area
12

3300
10

3 | 330·00

110· lbs.=*Ans.*

TABLE XXVIII.

WEIGHT OF WROUGHT IRON AND STEEL.

METALS.	Weight of a cubic foot in ounces.	Weight of a cubic foot in pounds.	Weight of a cubic inch in parts of a pound.
IRON BARS	7,788	486·8	0·281
STEEL, soft	7,833	489·6	0·283
,, hardened but not tempered	7,840	490·0	0·283
,, tempered but not hardened	7,816	488·5	0·283
,, tempered and hardened ...	7,818	488·6	0·283

TABLE XXIX.

WEIGHT OF BOILER PLATES,

PER SQUARE FOOT.

From $\frac{1}{8}$ of an inch to $1\frac{1}{8}$ inch thick.

Thick ...	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$
	qrs lbs	qrs lbs	qrs lbs	qrs lbs	qrs lbs	qrs lbs	qrs lbs	qrs lbs
Weight...	0 5	0 7½	0 10	0 12½	0 15	0 17½	0 20	0 22½
Thick ...	$\frac{5}{8}$	$1\frac{1}{16}$	$\frac{3}{4}$	$1\frac{3}{16}$	$\frac{7}{8}$	$1\frac{5}{16}$	1in.	$1\frac{1}{8}$in.
	qrs lbs	qrs lbs	qrs lbs	qrs lbs	qrs lbs	qrs lbs	qrs lbs	qrs lbs
Weight...	0 25	0 27½	1 2	1 4½	1 7	1 9½	1 12	1 17

TABLE XXX.

Weight of Malleable Round Iron, from 1 foot to 5 feet in length.

Size of Iron in inches and parts.	1 FOOT.			2 FEET.			3 FEET.			4 FEET.			5 FEET.		
	qrs.	lbs.	oz.	qrs.	lbs.	oz.	qrs.	lbs.	oz.	qrs.	lbs.	oz.	qrs.	lbs.	oz.
0 1/8	0	0	10	0	1	4	0	1	14	0	2	8	0	3	2
0 2/8	0	1	0	0	2	0	0	3	0	0	4	0	0	5	0
0 3/4	0	1	7	0	2	14	0	4	5	0	5	12	0	7	3
0 7/8	0	2	0	0	4	0	0	6	0	0	8	0	0	10	0
1	0	2	10	0	5	4	0	7	14	0	10	8	0	13	2
1 1/8	0	3	5	0	6	10	0	9	15	0	13	4	0	16	9
1 1/4	0	4	2	0	8	4	0	12	6	0	16	8	0	20	10
1 3/8	0	4	15	0	9	14	0	14	13	0	19	12	0	24	11
1 1/2	0	5	15	0	11	14	0	17	13	0	23	12	1	1	11
1 5/8	0	6	15	0	13	14	0	20	13	0	27	12	1	6	11
1 3/4	0	8	0	0	16	0	0	24	0	1	4	0	1	12	0
1 7/8	0	9	4	0	18	8	0	27	12	1	9	0	1	18	4
2	0	10	8	0	21	0	1	3	8	1	14	0	1	24	8
2 1/8	0	11	14	0	23	12	1	7	10	1	19	8	2	3	6
2 1/4	0	13	5	0	26	10	1	11	15	1	25	4	2	10	9
2 3/8	0	14	13	1	1	10	1	16	7	2	3	4	2	18	1
2 1/2	0	16	7	1	4	14	1	21	5	2	9	12	2	26	3
2 5/8	0	18	2	1	8	4	1	26	6	2	16	8	3	6	10
2 3/4	0	19	15	1	11	14	2	3	13	2	23	12	3	15	11
2 7/8	0	21	12	1	15	8	2	9	4	3	3	0	3	24	12
3	0	23	11	1	19	6	2	15	1	3	10	12	4	6	7
3 1/4	0	27	13	1	27	10	2	27	7	3	27	4	4	27	1
3 1/2	1	4	5	2	8	10	3	12	15	4	17	4	5	21	9
3 3/4	1	9	1	2	18	2	3	27	3	5	8	4	6	17	5
4	1	14	3	3	0	6	4	14	9	6	0	12	7	14	15
4 1/4	1	19	3	3	10	6	5	1	9	6	20	12	8	11	15
4 1/2	1	25	6	3	22	12	5	20	2	7	17	8	9	14	14
4 3/4	2	3	5	4	6	10	6	9	15	8	13	4	10	16	9
5	2	9	15	4	19	14	7	1	13	9	11	12	11	21	11
5 1/4	2	16	8	5	5	0	7	21	8	10	10	0	12	26	8
5 1/2	2	23	9	5	19	2	8	14	11	11	10	4	14	5	13
6	3	10	11	6	21	6	10	4	1	13	14	12	16	25	7
7	4	16	14	9	5	12	13	22	10	18	11	8	23	0	6
8	6	0	5	12	0	10	18	0	15	24	1	4	30	1	9

TABLE XXXI.

Weight of Malleable Square Iron, from 1 foot to 5 feet in length.

Size of Iron in inches and parts.	1 FOOT.			2 FEET.			3 FEET.			4 FEET.			5 FEET.		
	qrs.	lbs.	oz.	qrs.	lbs.	oz.	qrs.	lbs.	oz.	qrs.	lbs.	oz.	qrs.	lbs.	oz.
$0\frac{1}{2}$	0	0	13	0	1	10	0	2	7	0	3	4	0	4	1
$0\frac{5}{8}$	0	1	5	0	2	10	0	3	15	0	5	4	0	6	9
$0\frac{3}{4}$	0	1	14	0	3	12	0	5	10	0	7	8	0	9	6
$0\frac{7}{8}$	0	2	9	0	5	2	0	7	11	0	10	4	0	12	13
1	0	3	5	0	6	10	0	9	15	0	13	4	0	16	9
$1\frac{1}{8}$	0	4	4	0	8	8	0	12	12	0	17	0	0	21	4
$1\frac{1}{4}$	0	5	4	0	10	8	0	15	12	0	21	0	0	26	4
$1\frac{3}{8}$	0	6	5	0	12	10	0	18	15	0	25	4	1	3	9
$1\frac{1}{2}$	0	7	9	0	15	2	0	22	11	1	2	4	1	9	13
$1\frac{5}{8}$	0	8	14	0	17	12	0	26	10	1	7	8	1	16	6
$1\frac{3}{4}$	0	10	4	0	20	8	1	2	12	1	13	0	1	23	4
$1\frac{7}{8}$	0	11	13	0	23	10	1	7	7	1	19	4	2	3	1
2	0	13	7	0	26	14	1	12	5	1	25	12	2	11	3
$2\frac{1}{8}$	0	15	1	1	2	2	1	17	3	2	4	4	2	19	5
$2\frac{1}{4}$	0	17	0	1	6	0	1	23	0	2	12	0	3	1	0
$2\frac{3}{8}$	0	18	15	1	9	14	2	0	13	2	19	12	3	10	11
$2\frac{1}{2}$	0	21	0	1	14	0	2	7	0	3	0	0	3	21	0
$2\frac{5}{8}$	0	23	2	1	16	4	2	10	6	3	4	8	3	26	10
$2\frac{3}{4}$	0	25	6	1	22	12	2	20	2	3	17	8	4	14	14
$2\frac{7}{8}$	0	27	12	1	27	8	2	27	4	3	27	0	4	26	12
3	1	2	4	2	4	8	3	6	12	4	9	0	5	11	4
$3\frac{1}{4}$	1	7	7	2	14	14	3	22	5	5	1	12	6	9	3
$3\frac{1}{2}$	1	13	2	2	26	4	4	11	6	5	24	8	7	9	10
$3\frac{3}{4}$	1	18	4	3	8	8	4	26	12	6	17	0	8	7	4
4	1	25	12	3	23	8	5	21	4	7	19	0	9	16	12
$4\frac{1}{4}$	2	4	11	4	9	6	6	14	1	8	18	12	10	23	7
$4\frac{1}{2}$	2	12	0	4	24	0	7	8	0	9	20	0	12	4	0
$4\frac{3}{4}$	2	19	12	5	11	8	8	3	4	10	23	0	13	14	12
5	3	0	0	6	0	0	9	0	0	12	0	0	15	0	0
$5\frac{1}{4}$	3	8	9	6	17	2	9	25	11	13	6	4	16	14	13
$5\frac{1}{2}$	3	17	10	7	7	4	10	24	14	14	14	8	18	4	2
6	4	8	15	8	17	14	12	26	13	17	7	12	21	16	11
7	5	24	10	11	21	4	17	17	14	23	14	8	29	11	2
8	7	19	0	15	10	0	23	1	0	30	20	0	38	11	0

TABLE XXXII.

WEIGHT OF MALLEABLE FLAT IRON.

Thick.	Breadth	1 FOOT.			2 FEET.			3 FEET.			4 FEET.			5 FEET.		
IN	IN.	qrs.	lbs.	oz.	qrs.	lbs.	oz.	qrs.	lbs.	oz.	qrs.	lbs.	oz.	qrs.	lbs.	oz.
1/8	1	0	0	6½	0	0	13	0	1	3½	0	1	10	0	2	0½
	1¼	0	0	8	0	1	0	0	1	8	0	2	0	0	2	8
	1½	0	0	10	0	1	4	0	1	14	0	2	8	0	3	2
	1¾	0	0	11½	0	1	7	0	2	2½	0	2	14	0	3	9½
	2	0	0	13	0	1	10	0	2	7	0	3	4	0	4	1
	2¼	0	0	15	0	1	14	0	2	13	0	3	12	0	4	11
	2½	0	1	0¾	0	2	1½	0	3	2¼	0	4	3	0	5	3¾
	2¾	0	1	2	0	2	4	0	3	6	0	4	8	0	5	10
	3	0	1	4	0	2	8	0	3	12	0	5	0	0	6	4
	3½	0	1	7½	0	2	15	0	4	6½	0	5	14	0	7	5½
	4	0	1	10½	0	3	5	0	4	15½	0	6	10	0	8	4½
	4½	0	1	13½	0	3	11	0	5	8½	0	7	6	0	9	3½
	5	0	2	1½	0	4	3	0	6	4½	0	8	6	0	10	7½
	5½	0	2	4¾	0	4	9½	0	6	14¼	0	9	3	0	11	7¾
	6	0	2	8	0	5	0	0	7	8	0	10	0	0	12	8
	7	0	2	15	0	5	14	0	8	13	0	11	12	0	15	11
¼	1	0	0	13	0	1	10	0	2	7	0	3	4	0	4	1
	1¼	0	1	0	0	2	0	0	3	0	0	4	0	0	5	0
	1½	0	1	4	0	2	8	0	3	12	0	5	0	0	6	4
	1¾	0	1	7	0	2	14	0	4	5	0	5	12	0	7	3
	2	0	1	11¾	0	3	7½	0	5	3¼	0	6	15	0	8	10¾
	2¼	0	1	14	0	3	12	0	5	10	0	7	8	0	9	6
	2½	0	2	1½	0	4	3	0	6	4½	0	8	6	0	10	7½
	2¾	0	2	4¾	0	4	9½	0	6	14¼	0	9	3	0	11	7¾
	3	0	2	8	0	5	0	0	7	8	0	10	0	0	12	8
	3½	0	2	15	0	5	14	0	8	13	0	11	12	0	14	11
	4	0	3	5½	0	6	11	0	10	0½	0	13	6	0	16	11½
	4½	0	3	12	0	7	8	0	11	4	0	15	0	0	18	12
	5	0	4	3	0	8	6	0	12	9	0	16	12	0	20	15
	5½	0	4	9¾	0	9	3½	0	13	13¼	0	18	7	0	23	0¾
	6	0	5	0	0	10	0	0	15	0	0	20	0	0	25	0
	7	0	5	14	0	11	12	0	17	10	0	23	8	1	1	6
	8	0	6	11½	0	13	7	0	20	2½	0	26	14	1	5	9½

WEIGHT OF MALLEABLE FLAT IRON.

Thick.	Breadth	1 FOOT.			2 FEET.			3 FEET.			4 FEET.			5 FEET.		
IN	IN.	qrs.	lbs.	oz.	qrs.	lbs.	oz.	qrs.	lbs.	oz.	qrs.	lbs.	oz.	qrs.	lbs.	oz.
3/8	1	0	1	4	0	2	8	0	3	12	0	5	0	0	6	4
	1¼	0	1	9	0	3	2	0	4	11	0	6	4	0	7	13
	1½	0	1	14	0	3	12	0	5	10	0	7	8	0	9	6
	1¾	0	2	3	0	4	6	0	6	9	0	8	12	0	10	15
	2	0	2	8	0	5	0	0	7	8	0	10	0	0	12	8
	2¼	0	2	13	0	5	10	0	8	7	0	11	4	0	14	1
	2½	0	3	2	0	6	4	0	9	6	0	12	8	0	15	10
	2¾	0	3	7	0	6	14	0	10	5	0	13	12	0	17	3
	3	0	3	12	0	7	8	0	11	4	0	15	10	0	18	12
	3½	0	4	6½	0	8	13	0	13	3½	0	17	10	0	22	0½
	4	0	5	0½	0	10	1	0	15	1½	0	20	2	0	25	2½
	4½	0	5	10½	0	11	5	0	16	15½	0	22	10	1	0	4½
	5	0	6	4½	0	12	9	0	18	13½	0	25	2	1	3	6½
	5½	0	6	14¾	0	13	13½	0	20	12½	0	27	11	1	6	9¾
	6	0	7	8¾	0	15	1½	0	22	10¼	1	2	8	1	9	11¾
	7	0	8	13	0	17	10	0	26	7	1	7	4	1	16	1
½	1	0	1	10¾	0	3	5½	0	5	0½	0	6	11	0	8	5¾
	1¼	0	2	1½	0	4	3	0	6	4½	0	8	6	0	10	7½
	1½	0	2	8	0	5	0	0	7	8	0	10	0	0	12	8
	1¾	0	2	15	0	5	14	0	8	13	0	11	12	0	14	11
	2	0	3	5½	0	6	11	0	10	0½	0	13	6	0	16	11½
	2¼	0	3	12	0	7	8	0	11	4	0	15	0	0	18	12
	2½	0	4	3	0	8	6	0	12	9	0	16	12	0	20	15
	2¾	0	4	9¾	0	9	3½	0	13	13¼	0	18	7	0	23	0¾
	3	0	5	0½	0	10	1	0	15	1½	0	20	2	0	25	2½
	3½	0	5	14	0	11	12	0	17	10	0	23	8	1	1	6
	4	0	6	11½	0	13	7	0	20	2½	0	26	14	1	5	9½
	4½	0	7	8½	0	15	1½	0	22	10¼	1	2	3	1	9	11¾
	5	0	8	6	0	16	12	0	25	2	1	5	8	1	13	14
	5½	0	9	3¾	0	18	7½	0	27	11¼	1	8	15	1	18	2¾
	6	0	10	1	0	20	2	1	2	3	1	12	4	1	22	5
	7	0	11	12	0	23	8	1	7	4	1	19	0	2	2	12
	8	0	13	7	0	26	14	1	12	5	1	25	12	2	11	3

WEIGHT OF MALLEABLE FLAT IRON.

Thick.	Breadth.	1 FOOT.			2 FEET.			3 FEET.			4 FEET.			5 FEET.		
IN.	IN.	qrs.	lbs.	oz.	qrs.	lbs.	oz.	qrs.	lbs.	oz.	qrs.	lbs.	oz.	qrs.	lbs.	oz.
1/8	1 1/4	0	2	9 3/4	0	5	3 1/2	0	7	13 1/4	0	10	7	0	13	0 3/4
	1 1/2	0	3	2	0	6	4	0	9	6	0	12	8	0	15	10
	1 3/4	0	3	10 1/2	0	7	5	0	10	15 1/2	0	14	10	0	18	4 1/2
	2	0	4	3	0	8	6	0	12	9	0	16	12	0	20	15
	2 1/4	0	4	11 1/2	0	9	7	0	14	2 1/2	0	18	14	0	23	9 1/2
	2 1/2	0	5	4	0	10	8	0	15	12	0	21	0	0	26	4
	2 3/4	0	5	12	0	11	8	0	17	4	0	23	0	1	0	12
	3	0	6	4 3/4	0	12	9 1/2	0	18	14 1/4	0	25	3	1	3	7 3/4
	3 1/2	0	7	5 1/2	0	14	11	0	22	0 1/2	1	1	6	1	8	11 1/2
	4	0	8	6	0	16	12	0	25	2	1	5	8	1	13	14
	4 1/2	0	9	7	0	18	14	1	0	5	1	9	12	1	19	3
	5	0	10	8	0	21	0	1	3	8	1	14	0	1	24	8
	5 1/2	0	11	8 3/4	0	23	1 1/2	1	6	10 1/4	1	18	3	2	1	11 3/4
	6	0	12	9 1/2	0	25	3	1	9	12 1/2	1	22	6	2	6	15 1/2
	7	0	14	11	1	1	6	1	16	1	2	2	12	2	17	7
	8	0	16	12 1/2	1	5	9	1	22	5 1/2	2	11	2	2	27	14 1/2
3/4	1 1/4	0	3	2	0	6	4	0	9	6	0	12	8	0	15	10
	1 1/2	0	3	12	0	7	8	0	11	4	0	15	0	0	18	12
	1 3/4	0	4	6 1/2	0	8	13	0	13	3 1/2	0	17	10	0	22	0 1/2
	2	0	5	0 1/2	0	10	1	0	15	1 1/2	0	20	2	0	25	2 1/2
	2 1/4	0	5	10 1/2	0	11	5	0	16	15 1/2	0	22	10	1	0	4 1/2
	2 1/2	0	6	4 3/4	0	12	9 1/2	0	18	14 1/4	0	25	3	1	3	7 3/4
	2 3/4	0	6	14 3/4	0	13	13 1/2	0	20	12 1/4	0	27	11	1	6	9 3/4
	3	0	7	9	0	15	2	0	22	11	1	2	4	1	9	13
	3 1/2	0	8	13	0	17	10	0	26	7	1	7	4	1	16	1
	4	0	10	1	0	20	2	1	2	3	1	12	4	1	22	5
	4 1/2	0	11	5	0	22	10	1	5	15	1	17	4	2	0	9
	5	0	12	9	0	25	2	1	9	11	1	22	4	2	6	13
	5 1/2	0	13	13 1/2	0	27	11	1	13	8 1/2	1	27	6	2	13	3 1/2
	6	0	15	1 3/4	1	2	3 1/2	1	17	5 1/4	2	4	7	2	19	8 3/4
	7	0	17	10	1	7	4	1	24	14	2	14	8	3	4	2
	8	0	20	2 1/2	1	12	5	2	4	7 1/2	2	24	10	3	16	12 1/2

WEIGHT OF MALLEABLE FLAT IRON.

Thick.	Breadth.	1 FOOT.			2 FEET.			3 FEET.			4 FEET.			5 FEET.		
IN.	IN.	qrs.	lbs.	oz.	qrs.	lbs.	oz.	qrs.	lbs.	oz.	qrs.	lbs.	oz.	qrs.	lbs.	oz.
7/8	1½	0	4	6½	0	8	13	0	13	3½	0	17	10	0	22	0½
	1¾	0	5	2	0	10	4	0	15	6	0	20	8	0	25	10
	2	0	5	14	0	11	12	0	17	10	0	23	8	1	1	6
	2¼	0	6	9½	0	13	3	0	19	12½	0	26	6	1	4	15½
	2½	0	7	5½	0	14	11	0	22	0½	1	1	6	1	8	11½
	2¾	0	8	1	0	16	2	0	24	3	1	4	4	1	12	5
	3	0	8	13	0	17	10	0	26	7	1	7	4	1	16	1
	3½	0	10	4½	0	20	9	1	2	13½	1	13	2	1	23	6½
	4	0	11	12	0	23	8	1	7	4	1	19	0	2	2	12
	4½	0	13	3¾	0	26	7½	1	11	11¼	1	24	15	2	10	2¾
	5	0	14	11	1	1	6	1	16	1	2	2	12	2	17	7
	5½	0	16	2½	1	4	5	1	20	7½	2	8	10	2	24	12½
	6	0	17	10	1	7	4	1	24	14	2	14	8	3	4	2
	7	0	20	9	1	13	2	2	5	11	2	26	4	3	18	13
	8	0	23	8	1	19	0	2	14	8	3	10	0	4	5	8
	9	0	26	7	1	24	14	2	23	5	3	21	12	4	20	3
1	1½	0	5	0½	0	10	1	0	15	1½	0	20	2	0	25	2½
	1¾	0	5	13¾	0	11	11½	0	17	9¼	0	23	7	1	1	4¾
	2	0	6	11½	0	13	7	0	20	2½	0	26	14	1	5	9½
	2¼	0	7	9	0	15	2	0	22	11	1	2	4	1	9	13
	2½	0	8	6	0	16	12	0	25	2	1	5	8	1	13	14
	2¾	0	9	3½	0	18	7	0	27	10½	1	8	14	1	18	1½
	3	0	10	1	0	20	2	1	2	3	1	12	4	1	22	5
	3½	0	11	12	0	23	8	1	7	4	1	19	0	2	2	12
	4	0	13	7	0	26	14	1	12	5	1	25	12	2	11	3
	4½	0	15	2¾	1	2	5½	1	17	8¼	2	4	11	2	19	13¾
	5	0	16	12¾	1	5	9	1	22	6¼	2	11	3	2	27	15¾
	5½	0	18	7½	1	8	15	1	27	6½	2	17	14	3	8	5½
	6	0	20	2½	1	12	5	2	4	7½	2	24	10	3	16	12½
	7	0	23	8	1	19	0	2	14	8	3	10	0	4	5	8
	8	0	26	14	1	25	12	2	24	10	3	23	8	4	22	6
	9	1	2	3¾	2	4	7½	3	6	11¼	4	8	15	5	11	2¾

TABLE XXXIII.

WEIGHT OF ORDINARY ANGLED IRON.

Breadth in Inches and Parts.	Thickness of Root in Inches and Parts.	Thickness in Centre of Web in Inches and Parts.	1 FOOT.	2 FEET.	3 FEET.	4 FEET.	5 FEET.	6 FEET.	7 FEET.
			grs. lbs. oz.	grs. lbs. oz.	grs. lbs. oz.	grs. lbs. oz.	grs. lbs. oz.	grs. lbs. oz.	grs. lbs. oz.
1¼	⅛	3/16	0 1 7	0 2 14	0 4 5	0 5 12	0 7 3	0 8 10	0 10 1
1¼	¼	¼	0 1 14	0 3 12	0 5 10	0 7 8	0 9 6	0 11 4	0 13 2
1½	⅛	3/16	0 1 12	0 3 8	0 5 4	0 7 0	0 8 12	0 10 8	0 12 4
1½	¼	¼	0 2 6	0 4 12	0 7 2	0 9 8	0 11 14	0 14 4	0 16 10
1¾	¼	¼	0 2 11	0 5 6	0 8 1	0 10 12	0 13 7	0 16 2	0 18 13
1¾	5/16	¼	0 3 3	0 6 6	0 9 9	0 12 12	0 15 15	0 19 2	0 22 5
2	¼	5/16	0 3 2	0 6 4	0 9 6	0 12 8	0 15 10	0 18 12	0 21 14
2	5/16	5/16	0 3 13	0 7 10	0 11 7	0 15 4	0 19 1	0 22 14	0 26 11
2	9/16	5/16	0 5 1	0 10 2	0 15 3	0 20 4	0 25 5	1 2 6	1 7 7
2¼	7/16	7/16	0 5 13	0 11 10	0 17 7	0 23 4	1 1 1	1 6 14	1 12 11
2¼	11/16	7/16	0 5 12	0 11 8	0 17 4	0 23 0	1 0 12	1 6 8	1 12 4
2½	7/16	7/16	0 6 10	0 13 4	0 19 4	0 26 8	1 5 2	1 11 2	1 18 6
2½	½	7/16	0 7 5	0 14 10	0 21 15	1 1 4	1 8 9	1 15 14	1 23 3
2½	7/16	½	0 7 6	0 14 12	0 22 2	1 1 8	1 8 14	1 16 4	1 23 10
2½	½	½	0 8 5	0 16 10	0 24 15	1 5 4	1 13 9	1 21 14	2 2 3
3	7/16	½	0 8 1	0 16 2	0 24 3	1 4 4	1 12 8	1 20 9	2 0 10
3	½	½	0 9 3	0 18 6	0 27 9	1 8 12	1 17 15	1 27 2	2 8 5

WEIGHT OF ORDINARY ANGLED IRON.

3	⅞	⅝	0	11	8	0	22	6	1	5	9	1	16	12	1	27	15	2	11	2	2	22	5
3¼	¾	7/16	0	8	13	0	17	10	0	26	7	1	7	4	1	16	1	1	24	14	2	5	11
3¼	1	⅝	0	12	0	0	24	0	1	8	0	1	20	0	2	4	0	2	16	0	3	0	0
3¼	1⅛	¾	0	14	6	1	0	12	1	15	2	2	1	8	2	15	14	3	2	4	3	16	10
3½	1	⅝	0	13	4	0	26	8	1	11	12	1	25	0	2	10	4	2	23	8	3	8	12
3½	1⅛	¾	0	15	10	1	3	4	1	18	14	2	6	8	2	22	2	3	9	12	3	25	6
3¾	¾	½	0	11	10	0	23	4	1	6	14	1	18	8	2	2	2	2	13	12	2	25	6
3¾	⅞	⅝	0	14	5	1	0	10	1	14	15	2	1	4	2	15	9	3	1	14	3	16	3
4	⅝	½	0	12	8	0	25	0	1	9	8	1	22	0	2	6	8	2	19	0	3	3	8
4	¾	⅝	0	15	5	1	2	10	1	17	15	2	5	4	2	20	9	3	7	14	3	23	3
4	1	¾	0	18	2	1	8	4	1	26	6	2	16	8	3	6	10	3	24	12	4	14	14
4½	⅝	½	0	14	2	1	0	4	1	14	6	2	0	8	2	14	10	3	0	12	3	14	14
4½	¾	⅝	0	17	7	1	6	14	1	24	5	2	13	12	3	3	3	3	20	10	4	10	1
4½	1	¾	0	20	0	1	13	4	2	5	14	2	26	8	3	19	2	4	11	2	5	3	2
5	⅝	⅜	0	12	0	0	24	0	1	8	0	1	20	0	2	4	0	2	16	0	3	0	0
5	¾	½	0	15	13	1	3	10	1	19	7	2	7	4	2	23	1	3	10	14	3	26	11
5	1	⅝	0	19	8	1	11	0	2	2	8	2	22	0	3	13	8	4	5	0	4	24	8
5	1⅛	¾	0	23	2	1	18	4	2	13	6	3	8	8	4	3	10	4	26	12	5	21	14
3¼ × 3¾	1	⅝	0	13	4	0	26	8	1	11	12	1	25	0	2	10	4	2	23	8	3	8	12
4 × 2½	¾	⅜	0	7	10	0	15	4	0	22	14	1	2	8	1	10	2	1	17	12	1	25	6
4 × 3	⅞	7/16	0	9	8	0	19	0	1	0	8	1	10	0	1	19	8	2	1	0	2	10	8
4¾ × 3	⅞	½	0	12	0	0	24	0	1	8	0	1	20	0	2	4	0	2	16	0	3	0	0
5 × 3	1	½	0	12	8	0	25	0	1	9	8	1	22	0	2	6	8	2	19	0	3	3	8
6 × 3	¾	7/16	0	12	5	0	24	10	1	8	15	1	21	4	2	5	9	2	17	14	3	2	3
6 × 3¼	1	½	0	14	9	1	1	2	1	15	11	2	2	4	2	16	13	3	3	6	3	14	15

TABLE XXXIV.

WEIGHT OF A SUPERFICIAL SQUARE FOOT OF PLATE OR SHEET IRON.
Thickness measured by the Birmingham Wire Guage.

No. of the Wire Guage.	Thickness in Parts of an Inch.	Weight in Pounds and Ounces. lbs.	oz.	No. of the Wire Guage.	Thickness in Parts of an Inch.	Weight in Pounds and Ounces. lbs.	oz.
1	$\frac{5}{16}$	12	8	16	$\frac{1}{16}$	2	8
2		12	0	17		2	$2\frac{3}{4}$
3		11	0	18		1	$12\frac{3}{4}$
4	$\frac{1}{4}$	10	0	19		1	11
5		8	12	20		1	$8\frac{1}{2}$
6		8	2	21		1	$6\frac{1}{2}$
7	$\frac{3}{16}$	7	8	22	$\frac{1}{32}$	1	4
8		6	13	23		1	2
9		6	4	24		1	0
10		5	10	25		0	$14\frac{1}{4}$
11	$\frac{1}{8}$	5	0	26		0	$12\frac{3}{4}$
12		4	6	27		0	$11\frac{1}{2}$
13		3	12	28	$\frac{1}{64}$	0	10
14		3	2	29		0	9
15		2	13	30		0	8

TABLE XXXV.

FOR ASCERTAINING THE WEIGHT OF MALLEABLE IRON PIPES,
12 inches long, of various thicknesses and diameters.

Thickness in Parts of an Inch.	Decimal lbs.	Thickness in Parts of an Inch.	Decimal lbs.	Thickness in Parts of an Inch.	Decimal lbs.	Thickness in Parts of an Inch.	Decimal lbs.
$\frac{1}{32}$	·104	$\frac{1}{8}$	·416	$\frac{7}{32}$	·729	$\frac{3}{8}$	1·250
$\frac{1}{16}$	·208	$\frac{5}{32}$	·520	$\frac{1}{4}$	·833	$\frac{7}{16}$	1·459
$\frac{3}{32}$	·3125	$\frac{3}{16}$	·625	$\frac{5}{16}$	1·041	$\frac{1}{2}$	1·666

RULE—Multiply the circumference of the pipe in inches, by the decimal numbers opposite the thickness required, and by the length in feet—the product will be the weight in pounds avoirdupois *nearly*.

EXAMPLE—Required the weight of a pipe 6 feet long, 12 inches in circumference, and $\frac{1}{16}$ of an inch thick:

Here ·208 lbs. × 12 × 6=14·976 lbs.=14 lbs. $15\frac{1}{2}$ oz. *nearly*.

THE BOILER-MAKERS'

AND

IRON SHIP-BUILDERS' COMPANION.

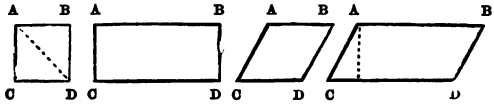
SECTION VII.—MISCELLANEOUS.

Mensuration of Surfaces.

FOUR-SIDED FIGURES.

FIG. 1 FIG. 2 FIG. 3 FIG. 4

Square. Rectangle. Rhombus. Rhomboid.



To find the area of a four-sided figure, whether it be a square, a rectangle, a rhombus, or a rhomboid.

RULE—Multiply the length, A B, or C D, by the breadth or perpendicular height; the product will be the area.

Examples.

Required the superficial content of a plate of iron, measuring 2 feet 6 inches, on the side of square. Figure 1.

2·5=2 feet 6 inches.
2·5

125
50

6·25=6¼ square feet.

N.B.—For the weight of a square foot of plate iron, according to its thickness—see table 29, page 187.

What is the number of superficial square feet contained in a plate of iron measuring 6 feet 9 inches long, by 3 feet 3 inches wide?—Fig. 2.

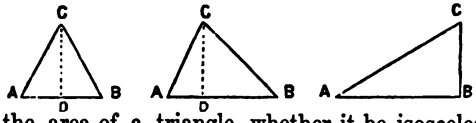
6·75=6 feet 9 inches.
3·25=3 feet 3 inches.

3375
1350
2025

21·9375=21 feet 11¼ in., or nearly 22 square feet

Triangles.

Fig. 1 Fig. 2 Fig. 3



To find the area of a triangle, whether it be isosceles, scalene, or right-angled.

Rule.—Multiply the base A B, by the perpendicular C D, and half the product will be the area.

Examples.

Required the area of a triangle, whose base is 32 inches, and perpendicular 40 inches.—Fig. 1.

32
40
2) 1280

640 square inches=area

How many square feet are there in a triangle, whose base is 8 feet 3 in and perpendicular 7 feet 6 inches?—Fig. 2.

8·25=8 feet 3 inches.
7·5=7 feet 6 inches.

4125
5775
2) 61·875

30·935=30 sq. ft. 11 inches, nearly.

Any two sides of a right-angled triangle being given, to find the third side.

Rule 1.—When the base, A B, and perpendicular C B, are given, to find the hypothenuse, or longest side; to the square of the base add the square of the perpendicular, the square root of the sum will give the longest side.

RULE 2.—When the hypothenuse or longest side A C, and one side are given, to find the other side; from the square of the hypothenuse subtract the square of the given side, the square root of the remainder will be the side required.*

EXAMPLES.

Given the base A B,=32 inches, the perpendicular B C,=24 inches, required the length of the longest side A C.—Fig. 3.

24	32
24	32
96	64
48	96
576	1024
	576
	1600 (40 in.=longest
	16 side.
	∴

Given the base A B, 32 inches, and longest side 40 inches; required the length of the perpendicular B C. —Fig. 3.

32	40
32	40
64	1600
96	1024
1024	576 (24 in.=perpen-
	4 dicular B C.
	44) 176
	176
	═══

NOTE—The diagonal line, or hypothenuse in a square is equal to the square root of twice the square of the side; and the side of a square is equal to the square root of half the square of its diagonal.

EXAMPLES.

Suppose each side of a square to equal 24 inches; find the diagonal.

24 in=A B Fig. 1 page 197

24	
96	
48	
576	
2	
1152 (33·94 in.=the diagonal	
9 line from A to D.	
63) 252	
189	
669) 6300	
6021	
6784) 27900	
27136	
774 rem.	

The diagonal line of a square measures 34 inches; find the side of square equal thereto.

34=A D, Fig. 1. page—

34	
136	
102	
2) 1156	
578 (24· inches=side of square	
4	
44) 178	
176	
2 rem.	

* The truth of these rules is evident from the 1st book of Euclid, 47 prop.

Trapezoids and Trapeziums.

Fig. 1

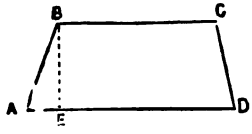
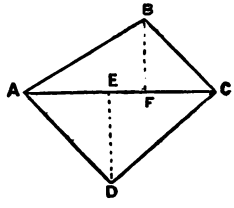


Fig. 2



To find the area of a Trapezoid.

Rule—Add together the two parallel sides A D and B C, multiply their sum by the distance between them—B E, and half the product is the area.

To find the area of a Trapezium.

Rule.—Divide the trapezium into two triangles by the diagonal line A C, and let two perpendiculars, B F and D E, fall on the diagonal from the opposite angles; then multiply the sum of these perpendiculars by the length of the diagonal, and divide by 2, which will give the area.

Examples.

What is the area of a trapezoid whose parallel sides are 7 feet 6 in., and 9 feet 9 inches, the perpendicular distance 7 feet?—Fig. 1.

7·5=7 feet 6 inches.
9·75=9 feet 9 inches.

17·25
7 feet
2)120·75
60·375=Ans.

Required the area of a trapezium A B C D, the diagonal A C 5 feet, D E 4 feet 2 inches, and B F 3 feet 4 inches.—Fig. 2.

B F 4·166=4 feet 2 inches
D E 3·333=3 „ 4 „

7·499
5 feet=A C
2)37·495
18·7475=18¾ square feet nearly.

The Circle.

To find the circumference of a circle when the diameter is given; or the diameter when the circumference is given.

Rule 1.—Multiply the diameter by 3·1416 and the product will be the circumference; or divide the circumference by 3·1416 and the quotient will be the diameter.

RULE 2.—As 7 is to 22 so is the diameter to the circumference; and as 22 is to 7 so is the circumference to the diameter.

EXAMPLES.

Required the circumference of a circle when the diameter is 3 feet.

3·1416
3 feet=diameter

9·4248=9 feet 5 inches.

What is the diameter of a circle when the circumference is 9·4248 feet?

3·1416) 9·4248 (3 feet diameter.
9·4248

What is the circumference of a circle when the diameter is 36 in.?

as 7 : 22 :: 36
22
—
72
72
7) 792

113⅐ inches. = circum.

Required the diameter of a circle when the circumference is 113⅐ in.

As 22 : 7 :: 113⅐ inches.
7
22) 792 (36 in=diameter
66
—
132
132

To find the area of a circle.

RULE 1.—Multiply the square of the diameter by ·7854, or the square of the circumference by ·07958; the product in either case will be the area.

RULE 2.—Multiply the circumference by the diameter, and divide the product by 4.

EXAMPLES.

Required the area of a circle, the diameter being 3 feet. By rule 1.

·7854
9=3^2 feet.

7·0686=Ans.

What is the area of a circle when the diameter is 3 feet, and circumference 9·4248 feet? By rule 2.

9·4248 circumference.
3 diameter.
4) 28·2744

7·0686=Ans.

The area of a circle given, to find the diameter or circumference

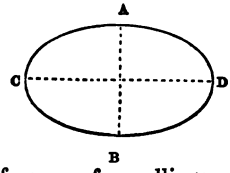
RULE.—Divide the area by ·7854, the square root of the quotient will give the diameter; then find the circumference by the common number 3·1416.

EXAMPLE.—Required to find the diameter and circumference of a circle, whose area is 452·3904 square inches.

```
·7854 ) 452·3904 ( 576·
        39270
        -----
        59690
        54978
        -----
        47124
        47124
        =====
```

```
576· ) 24 inches=diameter
       4
    ------
44 ) 176
     176
     ===
   3·1416
      24
   ------
   125664
   62832
   ------
   75·3984=75¾ inches, the circumference.
   =======
```

ELLIPSE OR OVAL.



To find the circumference of an ellipse or oval.

RULE—Add the length of the two axes, A B and C D together, and multiply the sum by 1·5708, the product will be the circumference; or, multiply the sum of the transverse and conjugate diameters by 3·1416, and half the product is the circumference, or near enough for most practical purposes.

EXAMPLES.

Required the length of an elliptic curve, whose conjugate A B is 40 inches and transverse C D 60 inches

```
 40        1·5708
 60          100
 ---       -------
100        157·0800 inches=Ans.
===        =======
```

What is the length of the circumference, when the diameters are 30 and 40 inches?

```
 30          3·1416
 40             70
 --        ----------
 70      2 ) 219.9120
           ----------
           109·956 inches=Ans.
           ========
```

To find the area of an ellipse or oval.

RULE.—Multiply the transverse diameter C D, by the conjugate A B, and the product by ·7854, and the last product is the area.

EXAMPLES.

Required the area of an ellipse, whose transverse and conjugate are 20 and 10 feet.

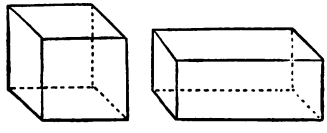
20	·7854
10	200
200	157·0800=area.

What is the area of an ellipse, whose two axes are 14 and 12 feet?

14	·7854
12	168
168	62832
	47124
	7854
	131·9472=area.

Mensuration of Solids.

FIG. 1 FIG. 2



To find the superficies and solidity of a cube.

FOR SUPERFICIES.

RULE.—Multiply the area of one of its sides by 6, and the product will be the area of the cube.

FOR THE SOLIDITY.

RULE.—Multiply the side of the cube by itself, and that product again by the side; the last product will be the solidity of the given cube.

EXAMPLES.

Required the superficies of a cube whose side is 28 inches.—Fig. 1.

28	
28	
224	
56	
784	area of one of the sides.
6	
4704	=the superficies in square inches.

What is the solidity of a cube whose side is 8 feet?

8	
8	
64	
8	
512	solid feet=Ans.

To find the superficies and solidity of a parallelopipedon.

FOR SUPERFICIES.

RULE.—Multiply the perimeter of the end by the length; to the product add twice the area of the end, and the sum will be the superficies.

FOR THE SOLIDITY.

RULE.—Multiply the area of the end by the length, and the product will be the solidity.

EXAMPLES.

Required the superficies of a parallelopipedon whose length is 6 feet, breadth 3 feet, and thickness 2 feet.—Fig. 2.

2+2=4 3
3+3=6 2
10 perimeter 6 area of end.
6 2
60 12 area of both
12 add. ends.
72 square feet=Ans.

What is the solidity of a parallelopipedon, whose length is 12 feet, breadth 6 feet, and depth 4 feet?

6
4
24 area of end.
12 length.
288 cubic feet=Ans.

CYLINDERS AND PRISMS.

FIG. 1

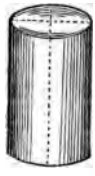


FIG. 2

To find the solidity of cylinders and prisms.

RULE.—Multiply the area of the base by the height of the cylinder or prism, and the product will give the solid content.

Examples.

Required the solid content of a cylinder whose base is 3 feet and height 6 feet.

3×3=9 ·7854
9

7·0686 area of base.
6 height of cylinder.
42·4116 cubic feet=Ans.

What is the solid content of a prism, whose length is 72 inches, base 32 inches, and perpendicular height 40 inches?

Here 32×40÷2=640 sq. in. the area
72 the length.

1280
4480

46080 cubic in.=Ans

To find the convex surface of a cylinder.

Rule—Multiply the circumference by the length of the cylinder; the product will be the convex surface required.

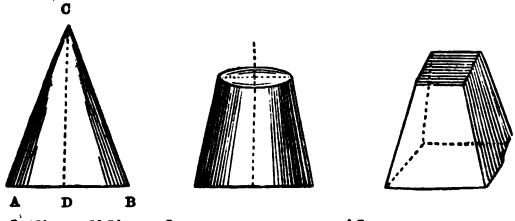
Example.—What is the convex surface of a cylinder, whose base equals 3 feet, and perpendicular height 6 feet?

Here 3·1416 × 3 × 6=56·5488 square feet=Ans.

Cones and Pyramids.

Cone or Pyramid. Frustum of a Cone. Frustum of a Pyramid.

Fig. 1. Fig. 2. Fig. 3.



To find the solidity of a cone or pyramid.

Rule.—Multiply the area of the base A B, by the perpendicular height C D, and one third of the product will be the content.

Example—What is the solidity of a cone or pyramid, whose area of base equals 1017·8784 square inches, the perpendicular height being 50 inches?

Here $1017{\cdot}8784 \times 50 = \frac{50893{\cdot}64}{\frac{1}{3}} = \frac{16964{\cdot}92}{1728} = 9{\cdot}81$ cubic feet.

To find the solidity of the frustum of a cone.

RULE.—To the product of the diameters of the two ends, add the sum of their squares; multiply this sum by the perpendicular height and by ·2618, the product will be the solid content.

EXAMPLE.—What is the solidity of the frustum of a cone, whose perpendicular height is 20 inches, the greater diameter 32, and lesser 24 in.?

Here $24 \times 32 = 768$
$24^2 = 576$
$32^2 = 1024$

2368
20 =height.

47360
·2618 =multiplier.

378880
47360
284160
94720

12398·8480 cubic inches.

1728=7.175 cubic feet=Ans.

To find the solidity of the frustum of a pyramid.

RULE.—Add to the areas of the two ends of the frustum the square root of their product, and this sum multiplied by one third of the height will give the solidity.

EXAMPLE.—Required the solid content of the frustum of a pyramid, whose perpendicular height is 48 inches, the area of the base 288 square inches, and area of top end 128 square inches.

Here $288 + 128 = 416 \cdot$ (20·396 =sqr. root.

4
403) 1600
1209
4069) 39100
36621
40786) 247900
244716

416
20·396

436·396
16=⅓ the height

2618376
436396

6932·336 cubic inches
=Ans.

To find the convex surface of a right cone or pyramid, also to find the convex surface of a frustum of a right cone or pyramid.

RULE 1.—Multiply the perimeter or circumference of the base by the slant height, or length of the side of the cone, and half

the product will be the slant surface, to which add the area of the base, and the product will be the whole surface.

RULE 2.—Multiply the sum of the perimeters of the two ends by the slant height or side of the frustum, and half the product will be the slant surface; to which add the areas of the two ends, and the product will be the whole surface.

EXAMPLES.

Required the convex surface of a right cone whose diameter of base is 10 inches, and slant height 36 in.

31·416
10 in.=diameter of base.
31·4160
36 in.=slant height
1884960
942480
2)1130·9760

·7854
100
78·5400

565·488 convex surface=
78·54 area of base. [Ans.
644·028
144=4·472 square feet the whole superfices

What is the convex surface of the frustum of a right cone, the diameter at the greater end being 10, at the lesser 6 inches, and slant height 15½ inches?

·7854×100= 78·54
·7854×36= 28·2744
106·8144
3·1416×10=31·4160
3·1416× 6=18·8496
50·2656
15·5=15½ inches.
2513280
2513280
502656
2)779·11680
389·5584 convex surface
106·8144 =Ans
496·3728 square in., the whole superficies.

SPHERES AND SEGMENTS OF SPHERES.

FIG. 1.

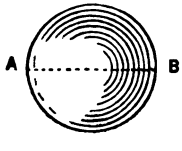
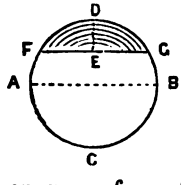


FIG. 2.



To find the solid content and convex surface of a sphere or globe; also to find the solid content and convex surface of the segment of a sphere or globe.

RULE 1.—Multiply the cube of the diameter by ·5236, and the product is the solid content.

RULE 2.—Multiply the square of the diameter A B, by 3·1416, the product will be the convex superficies.

RULE 3.—Add the square of the height, E D, to three times the square of the radius of the base F G; multiply that sum by the height and by ·5236, and the product is the solid content.

RULE 4.—Multiply the height of the segment by the whole circumference of the sphere, and the product is the convex or curved surface.

EXAMPLES.

Required the solid content of a sphere whose diameter equals 12 in.

12 diameter.
12

144
12

1728 cube.
·5236 multiplier.

10368
5184
3456
8640

904·7808 cubic inches=Ans.

Required the solid content of a spherical segment, whose height is 8 inches, and radius of the base 16 inches.

Here $8^2 = 64$
$16^2 \times 3 = 768$

832
8 the height.

6656
·5236 multiplier.

39936
19968
13312
33280

3485·0816 cubic inches =Ans.

What is the convex surface of a sphere, the diameter being 12 in.?

12 diameter.
12

144 square.
3·1416 multiplier.

864
144
576
144
432

452·3904 square inches=Ans.

What is the surface of a segment of a sphere, whose height is 8 in., the diameter being 50 inches?

3·1416
50

157·0800 the circumference.
8 the height.

1256·6400 square inches=Ans.

Liquid Measuring.

In measuring vessels for containing liquids they are computed as if they were real solids, their contents being reduced to imperial gallons. The imperial gallon contains 277·274 cubic inches.

To find the number of imperial gallons contained in any square or rectangular cistern or tank.

Rule.—Find the content of the cistern in cubic feet and parts, then multiply the sum by 6·232, or find the content of cistern in cubic inches and parts, and multiply the sum by ·003607; the product in either case will be the number of imperial gallons.

Examples.

A cistern is 2 feet 6 inches on the side of square, and 7 feet long; how many gallons will it contain?—Fig. 1 page 197.

Here $2{\cdot}5^2$=area of square
6·25 square feet.
7 feet long.

43·75
6·232=multiplier.

8750
13125
8750
26250

272·65000 gallons=Ans.

A rectangular tank measuring 6 feet 9 inches long, 3 feet 3 inches wide, and 5 feet deep; what number of gallons will it contain?—Fig. 2, page 197.

Here $6{\cdot}75 \times 3{\cdot}25 \times 5$=
109·6875 cubic feet.
6·232 multiplier.

2193750
3290625
2193750
6581250

683·5725000 gals.=Ans.

Any two dimensions of a square or rectangular cistern or tank being given, to find the third that shall contain any number of imperial gallons required.

Rule.—Multiply the number of gallons that the cistern or tank is required to contain by ·16046 for feet, or by 277·274 for inches, according as the dimensions are given in feet or inches, divide this product by the products of the two given dimensions, and the quotient will be the third dimension of the cistern or tank, nearly.

Examples.

What will be the depth of a tank to contain 1600 gallons, the length being $8\frac{1}{2}$ feet, and width $6\frac{1}{4}$ feet?

6·75 ·16046
8·5 1600 gallons.

3375 9627600
5400 16046

57·375) 256·73600 (4·5 feet the depth.
229500 =Ans.

272360

Required the length of a cistern to contain $6\frac{1}{4}$ gallons, the depth being 8 inches and width 12 inches.

277·274
6·25 gallons.

inches. 1386370
12 554548
8 1663644

96) 1732·96250 (18 in. the length=Ans
96

772
768

49

To find the content of a cylinder in imperial gallons.

Rule 1.—Multiply the square of the diameter in feet by the length of the cylinder, also in feet, and by 4·895.

Rule 2.—Multiply the square of the diameter in inches by the length in feet, and by ·034.

Rule 3.—Multiply the square of the diameter in inches by the length, also in inches, and by ·00283, and the product will be the content in gallons, nearly.

Examples.

What number of gallons will a cylindrical cistern contain, the diameter being 8 feet, and length 12 feet?

8^2=64 square of diameter.
12

768
4·895 multiplier.

3840
6912
6144
3072

3759·360 gallons=Ans.

How many gallons are contained in a cylinder whose diameter is 15 inches and length 20 inches?

15^2=225 square of diameter
20

4500
·00283

13500
36000
9000

12·73500 gallons=Ans.

The length of a cylinder given, to find the diameter, or the diameter given, to find the length that shall contain any number of imperial gallons required.

RULE 1.—Multiply the number of gallons that the cylinder is required to contain by ·2043, divide the product by the length in feet, and the square root of the quotient will be the diameter in feet and parts of a foot.

RULE 2.—Multiply the number of gallons by ·2043, and divide the product by the square of the diameter in feet, and the quotient is the length in feet and parts of a foot; and if the dimensions are given in inches in place of feet, use 353 in place of ·2043.

EXAMPLES.

Required the diameter of a cylinder to contain 16 gallons, when the length is 2 feet 6 inches.

Here $16 \times \cdot2043 = 3\cdot2688 \div 2\cdot5 = 1\cdot3075$

$1\cdot3075$ ($1\cdot1434$ sqr. root = 1 foot $1\frac{3}{4}$ in. the diameter required.

1 | 1
21 | 30
21
224 | 975
896
2283 | 7900
6849
22894 | 105100
91456

What is the length of a cylinder to contain 16 gallons, the diameter being 13·72 inches?

13·72
13·72
2744
9604
4116
1372
188·2384) 5648·000 (30· in. = Ans.
5647·152

353
16
2118
353

To find the content of a sphere or globe in imperial gallons.

RULE—Multiply the cube of the diameter in feet, by 3·263; or, multiply the cube of the diameter in inches by ·001888, and the product in either case will be the content in gallons.

NOTE.—The weight of a cubic foot of water equals 62·5 lbs. avoirdupois.
Weight of a cubic inch equals ·03617 lbs. avoirdupois.
Weight of a column of water 12 inches high and 1 inch square, equals ·434 lbs, avoirdupois.
Weight of a cylindrical foot of water equals 49·1 lbs. avoirdupois.
Weight of a cylindrical inch equals ·02842 lbs. avoirdupois.
Weight of a cylindrical column of water 12 inches high and 1 inch diameter equals ·341 lbs. avoirdupois.

11·2 imperial gallons of water=1 cwt.
224 imperial gallons of water=1 ton.
1·8 cubic feet of water - - =1 cwt.
35·84 cubic feet of water - - =1 ton.
1 cubic foot of water - - =6·232 imperial gallons.
1 cylindrical foot of water=4·895 imperial gallons.

EXAMPLE.—What is the weight of a cylindrical column of water the diameter being 18 inches, and height 12 feet.

Here $18^2 \times 12 = 3888 \times \cdot 341 = 1325 \cdot 8$ lbs. avoirdupois.

Problems in Practical Geometry, relative to Template Making, &c.

FIG. 1.

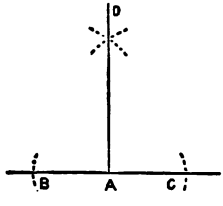
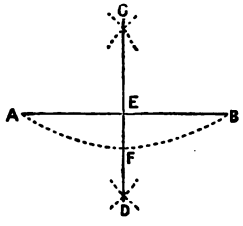


FIG. 2.



To erect a perpendicular on a given right line, from a given point in that line—Fig. 1.

Let B C be the given line, and A the given point. From A as a centre, with any convenient radius, cross the line B C with the arcs B and C; from the centres B and C, with a radius of more than half the given line, describe arcs intersecting each other in D; the line D A drawn from the intersection of the arcs D to the given point A, is the perpendicular required.

To bisect a given line—Fig. 2.

Let A B be the given line. From A B as a centre, with a radius exceeding A E, describe arcs at C and D; from B as a centre with the same radius, describe arcs intersecting the former arcs in C and D; the line C D, drawn through the points of intersection, bisects the given line A B; and should the given line be any portion of a circle, as the arc A F B, it must be bisected in like manner, the centres A and B being taken in the extremities of the arc.

Fig. 1.

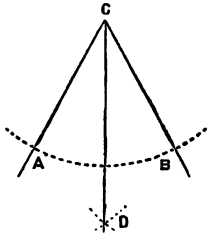
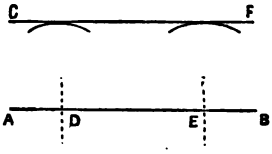


Fig. 2.



To bisect a given angle—Fig. 1.

Let A B C be the given angle. From the centre C, with any radius, describe the arc A B; from A and B describe arcs intersecting each other in D; draw the line C D from the angular point C, through the point of intersection D, and the angle is bisected, or divided into two equal parts.

To draw a line parallel to a given line—Fig. 2.

Let A B be the given line. For a radius, set the compasses or trammel points to the required distance the lines are to be apart, and from any two points D and E, describe the two arcs, then draw the line C F, touching the arcs, and C F will be parallel to A B.

Fig. 1.

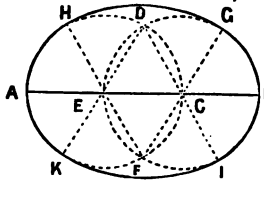
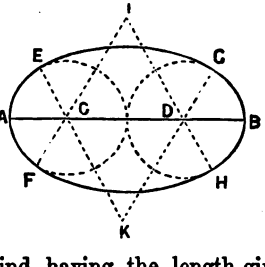


Fig. 2.



To draw an oval of the first kind, having the length given—Fig. 1.

Divide the given length A B, into three equal parts, by means of the circles A H D C, B G D E, cutting each other in the points D and F; draw diameters of these circles from D and F: then

from F as a centre, with radius equal to F G, draw the arc H G, and from D as a centre, with radius D K, draw the arc K I, which will complete the oval.

To draw an oval of the second kind, having the length given—Fig. 2.

Divide the length A B, into four equal parts, by means of the circles A E F, G B H. Set off A E, A F equal to radius A C, and B G, B H, equal to radius B D; from the points E F G H draw lines through the centres C D, cutting each other in the points I K; and from K as a centre, with radius K E, draw the arc E G, and from I as a centre, with radius I F, draw the arc F H, and the oval will be completed.

Fig. 1.

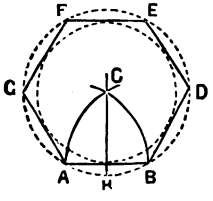
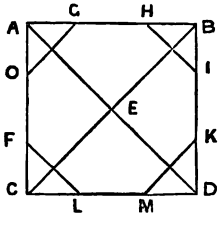


Fig. 2.



To construct a regular hexagon upon a given right line—Fig. 1.

From A B as centres, with the radius A B, describe arcs intersecting in C; on C as a centre with the same radius, describe a circle, and A B will be one side of the hexagon to be inscribed with it; carry A B six times over the circumference, and through the points of intersection draw the lines B D, D E, E F, F G, G A, and the hexagon is drawn as required.

To cut off the corners of a given square, so as to form an octagon—Fig. 2.

Let A B C D be the given square. Draw the two diagonals, bisecting each other in E; then with the distance C E, mark off from each corner of the square C O, C M, D L, D I, B K, B G, and A H, A F; lastly, draw from O to G, H to I, K to M, and L to F, and the required octagon is formed.

Fig. 1.

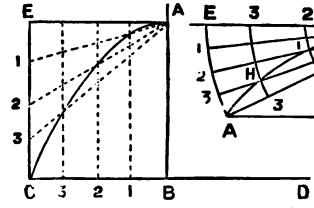
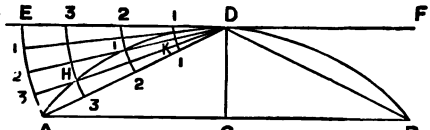


Fig. 2.



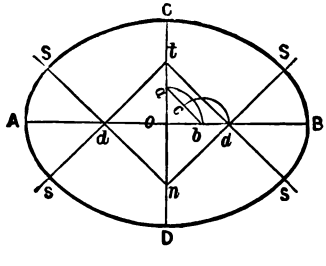
To draw a parabola by finding any number of points in the curve—Fig. 1.

Let A B be any diameter, and C D the double ordinate. Draw C E equal and parallel to A B; divide C D and C B each into the same number of equal parts, numbering both towards C; from the points 1, 2, 3, on B C, draw lines parallel to A B; and from 1, 2, 3, on E C, draw lines towards A; the points where the corresponding numbered lines intersect are in the curve of the parabola; the points for the other half of the parabola must be found in the same way.

To draw the curve line of an arc without having recourse to the centre—Fig. 2.

Let A B be the length of the cord line, and C D the versed sine or height of the arc. Join A D, B D, and through D draw E F parallel to A B; on D, with radius D A, describe the arc A E, which divide into any number of equal parts; divide D E into the same number of parts as A E, and on D as a centre, describe the arcs 3 3, 2 2, 1 1; then from the points 1, 2, 3, on the arc A E, draw lines towards D, intersecting the arcs 3 3, 2 2, 1 1, in the points H I K; through these points half of the required curve is to be traced; the other half will be found in the same manner.

To describe an ellipse, having the two diameters given—Fig. 1.

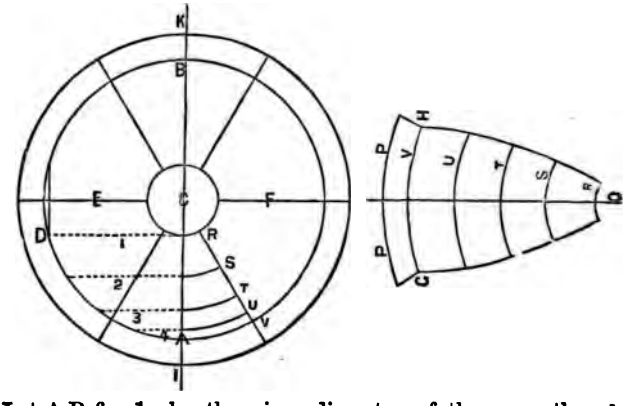


Bisect A B by a perpendicular C D, making *o* C, *o* D, each equal to half of the conjugate diameter; from *o* as a centre, with radius equal to the difference of the semi-diameters, describe the arc *a b*, and from *b* as a centre, with half the cord line *b c a*, describe the arc *c d*; then from the centre *o*, with distance *o d*,

cut the diameters in *d n* and *d t*; now draw the lines *n* S, *n* S, *t* S *t* S, then from *n* and *t*, describe the arcs S C S, S D S, also from *d* and *d*, describe the smaller arcs S A S, S B S, which will complete the ellipse as required.

To describe the template for a given diameter of Sugar Pan, of the spherical form.

FIG. 1. FIG. 2.

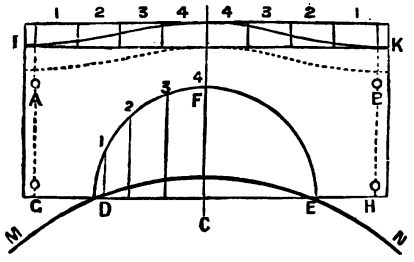


Let A B fig. 1, be the given diameter of the pan, the plates for forming the same are to be jump-jointed; the breadth and length of each plate is to bear an equal portion to the required circle.

From C as a centre, with radius of the given diameter, describe the circle A B; divide this circle into as many equal parts as it is intended to have plates in the circle of the pan. From D to A divide into any number of equal parts, say 4; then from the points of division draw lines parallel to the line E F, terminating at the line A B. Now, with C as a centre, describe the arcs R S T U V; having done this, take the sheet iron of which the template is to be made and draw a line through the centre of it, and set the trammel points to one fourth of the circumference of the given diameter, then with O as a centre, describe the arc G H, fig. 2; now take the length of D A, measuring from D to A, fig. 1, which divide into the same number of equal parts, and with O as a centre, draw the arcs as shown in the figure, and make the curved lines, R S T U V equal in length to those marked R S T U V, fig. 1; then by bend-

ing a thin lath round the points R S T U V, the curve lines of the outsides of the template may be drawn. And should the pan required to be flanged, in such case, draw the outer circle I K, to the diameter required, fig. 1, and add its portion to the top part of the template, P P, as shown in the figure, and the template will be as required.

To cut the selvage of a plate required to form a given cylinder, which is to be flanged, and made to fit a given circle.



From centre of rivet holes, let A B be one half of the circumference of the given cylinder, and M N the given circle.

On C as a centre, with radius of the given diameter of cylinder, describe the semicircle D F E; divide D F into any number of equal parts, say four, then draw lines from the points 1, 2, 3, 4, parallel to the perpendicular line C F, until they meet the line G H; now describe the given circle M N, touching the points D E, and then divide the line I K into the same number of equal parts 1, 2, 3, 4, on each side of the perpendicular line C F, measuring from the centre of rivet holes. Having done this, measure off on both sides of the line I K, the heights 1, 2, 3, 4, which stand between the lines D C, and through the points of intersection trace the curved lines required. The other half of the circumference must be described in the same manner, and the selvage of both plates, which are to form the cylinder, will be completed.

TABLE XXXVI.

Strength of Steel and Iron.

The cohesive strength of a bar of steel or iron is that force with which it resists being torn asunder when pulled lengthwise, and the strength of a bar exposed to strains in the direction of its length, is in proportion to the transverse area, whatever be its figure, length, or position.

Table showing the cohesive strength of steel and iron bars. One-third of the ultimate strength is always considered sufficient for a permanent load.

MATERIAL.	The strength of 1 inch Square Bar.	One-Third the strength.	The strength of 1 inch Round Bar.	One-Third the strength.
	Lbs.	Lbs.	Lbs.	Lbs.
English Iron, 1st quality	66900·	22300·	52544·	17514·
,, ,, 2nd quality	55872·	18724·	43881·	14627·
Welsh Iron, 1st quality	64960·	21653·	51018·	17006·
,, ,, 2nd quality...	55776·	18792·	42806·	14268·
Swedish Iron	72064·	24021·	56599·	18866·
Cast Steel	134256·	44752·	105444·	35148·
Blister Steel	133152·	44384·	104577·	34859·
Shear Steel	124400·	41466·	97703·	32567·

To find the ultimate cohesive strength of square, flat, and round bars.

RULE.—Multiply the area of section of the bar in inches and parts, by the tabular number required, and the product will be the ultimate cohesive strength.

EXAMPLES.

A bar of English Iron, 2nd quality, being $1\frac{1}{2}$ inches square, what is its cohesive power, or absolute strength?

$1{\cdot}5 \times 1{\cdot}5 = 2{\cdot}25 \times 55872 = 125712$ lbs. =Ans.

Required the ultimate strength of a bar of round iron, 2nd quality, $1\frac{1}{2}$ inches in diameter.

$1{\cdot}5 \times 1{\cdot}5 = 2{\cdot}25 \times 43881 = 98732\frac{1}{4}$ lbs. =Ans.

NOTE.—The diameter of a circle multiplied by ·8862 equals the side of an equal square—and the side of a square multiplied by 1·128 equals the diameter of an equal circle.

EXAMPLES.

The diameter of a circle is $1\frac{3}{4}$ in. what is the side of square equal in area to the given diameter?

$1{\cdot}75 \times {\cdot}8862 = 1{\cdot}55 = 1\frac{9}{16}$ in. nearly. =Ans.

The side of a square being $1\frac{9}{16}$ inch, what will be the diameter of circle equal in area to the given square

$1{\cdot}5625 \times 1{\cdot}128 = 1{\cdot}76 = 1\frac{3}{4}$ in. nearly. =Ans.

TABLE XXXVII.

ntaining the fractional parts of an inch, when divided into thirty-two parts; also a foot of twelve inches reduced to decimals.

ecimals.	Parts of an Inch.	Decimals.	Parts of an Inch.	Decimals.	Parts of a Foot.
·03125	equal to $\frac{1}{32}$	·5	equal to $\frac{1}{2}$	·0833	equal to 1 inch
·0625	,, $\frac{1}{16}$	·53125	,, $\frac{17}{32}$	·1666	,, 2 ,,
·09375	,, $\frac{3}{32}$	·5625	,, $\frac{9}{16}$	·25	,, 3 ,,
·125	,, $\frac{1}{8}$	·59375	,, $\frac{19}{32}$	·3333	,, 4 ,,
·15625	,, $\frac{5}{32}$	·625	,, $\frac{5}{8}$	·4166	,, 5 ,,
·1875	,, $\frac{3}{16}$	·65625	,, $\frac{21}{32}$	·5	,, 6 ,,
·21875	,, $\frac{7}{32}$	·6875	,, $\frac{11}{16}$	·5833	,, 7 ,,
·25	,, $\frac{1}{4}$	·71875	,, $\frac{23}{32}$	·6666	,, 8 ,,
·28125	,, $\frac{9}{32}$	·75	,, $\frac{3}{4}$	·75	,, 9 ,,
·3125	,, $\frac{5}{16}$	·78125	,, $\frac{25}{32}$	·8333	,, 10 ,,
·34375	,, $\frac{11}{32}$	·8125	,, $\frac{13}{16}$	·9166	,, 11 ,,
·375	,, $\frac{3}{8}$	·84375	,, $\frac{27}{32}$	·010416	,, $\frac{1}{8}$ of in.
·40625	,, $\frac{13}{32}$	·875	,, $\frac{7}{8}$	·02083	,, $\frac{1}{4}$,,
·4375	,, $\frac{7}{16}$	·90625	,, $\frac{29}{32}$	·03125	,, $\frac{3}{8}$,,
·46875	,, $\frac{15}{32}$	·9375	,, $\frac{15}{16}$	·04166	,, $\frac{1}{2}$,,
		·96875	,, $\frac{31}{32}$	·052083	,, $\frac{5}{8}$,,
				·0625	,, $\frac{3}{4}$,,
				·072916	,, $\frac{7}{8}$,,

The above table is to facilitate the multiplication and division of parts an inch, and other calculations. For example, suppose a plate of n to measure $48\frac{1}{2}$ inches long, $18\frac{3}{4}$ inches broad, and $\frac{1}{4}$ of an inch ck, what number of cubic inches will it contain?

EXAMPLE.

$48{\cdot}5 = 48\frac{1}{2}$
$18{\cdot}75 = 18\frac{3}{4}$

2425
3395
3880
485

909·375

909·375
·25 = $\frac{1}{4}$

4546875
1818750

227·34375 = cubic inches = Ans.

Tempering Steel Tools.

For Cast Iron.—For boring cylinders, turning rolls, or any large cast iron, let the tools be as hard as clean water will make them, minding not to heat the steel more than cherry-red.

For Wrought Iron.—Large tools for turning and boring, to be heated to cherry-red, and let down to a pale straw colour, and small tools a shade darker.

Screw-Dies, Plates, Taps, &c.—To be heated to cherry-red, and tempered to a very dark straw colour.

Large Rimers, and Steeled Iron Taps.—To be heated uniformly to a cherry-red, and dipped in a cistern containing warm water of about 80 degrees Fahrenheit; in this case they will require no letting down—always bearing in mind to dip the large end of the rimer in the water first, this will give a uniformity of hardness.

For Small Rimers, &c.—Let them be heated to cherry-red and tempered to yellow, slightly tinged with purple.

For Shears and Punches.—Heat them to cherry-red and dip them in clean cold water, and temper them to the colour of a light purple.

Tools for Cutting Wood—Heat them to cherry-red very carefully, and dip them in warm water, of about 30 degrees Fahrenheit, then temper them to a dark straw colour.

Case Hardening.

The most common plan for case hardening consists in the insertion of the articles among horn or leather cuttings, bone dust, or animal charcoal, in an iron box provided with a lid luted with clay, which is then put into a furnace for a period answerable to the depth of steel required, after this the box is taken from the furnace and its contents suddenly immersed in cold water.

Many articles may be case hardened by prussiate of potash.

Take prussiate of potash and pound it to a fine powder, then heat the article to a dull red heat, and sprinkle upon it sufficient of the prussiate of potash, then return it to the fire for a minute or so, and finally immerse in water till cold.